PHOTOFACT* FOLDER SET

*TRADE MARK

NO. 138

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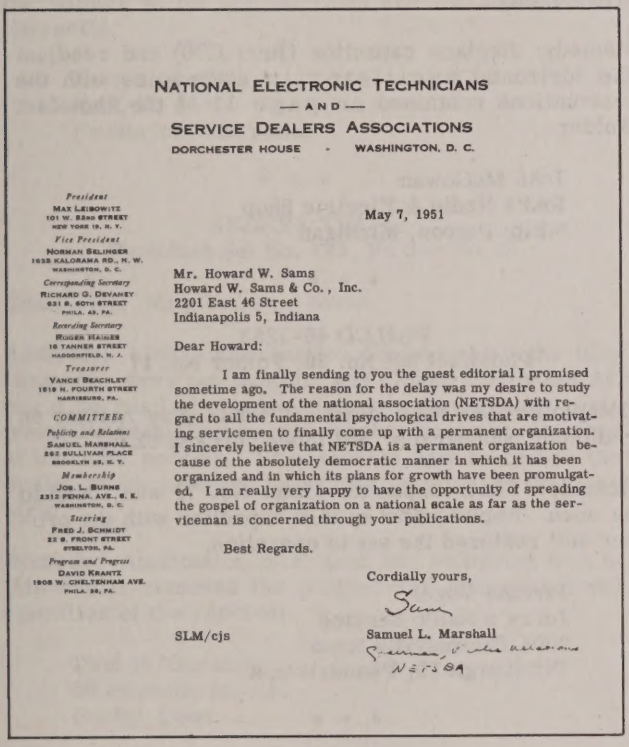
The PHOTOFACT Servicer

June 15, 1951 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ Vol. No. 14, Nos. 137 & 138

Samuel L. Marshall is Managing Editor of the magazine "Radio-Television Service Dealer." His letter reproduced below is self-explanatory. The columns of the Servicer are open to its readers for an expression of their views on the subject covered by Mr. Marshall.



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May 7, 1951

Mr. Howard W. Sams
Howard W. Sams & Co., Inc.
2201 East 46 Street
Indianapolis 5, Indiana

Dear Howard:

I am finally sending to you the guest editorial I promised sometime ago. The reason for the delay was my desire to study the development of the national association (NETSDA) with regard to all the fundamental psychological drives that are motivating servicemen to finally come up with a permanent organization. I sincerely believe that NETSDA is a permanent organization because of the absolutely democratic manner in which it has been organized and in which its plans for growth have been promulgated. I am really very happy to have the opportunity of spreading the gospel of organization on a national scale as far as the serviceman is concerned through your publications.

Best Regards.

Cordially yours,

Samuel L. Marshall

SLM/cjs

A NATIONAL ORGANIZATION

It's a wonderful thing to be a rugged individualist, but in this day and age, when everyone from chambermaids to bankers is organized for his own betterment and protection, a rugged individualist beats his head against a stone wall when he has a legitimate gripe against, or is subject to attack from, other organized groups.

Practically every segment of the television and electronic industry is organized into some large and effective national association. Thus, the manufacturers have the RTMA, the engineers their IRE, the distributors their NEDA, the representatives their "REPS," the dealers their NARDA, and so on down the line; but the serviceman and service dealer up to very recently has had no effective national organization to represent him or fight his battles when the need arose.

Perhaps it is for this reason that he has remained the "poor relation" of the radio industry; the object of inward scorn and outward sympathy and charity in the form of door-prizes, free handouts, free this - - free that; the kind of sugar coated stuff they feed kids when they want to win them over. Or perhaps it is for this reason that whenever a scapegoat was needed for the industry the serviceman was "it." He had no strength to fight back and therefore could be attacked with impunity.

The National Electronic Technicians and Service Dealers Association has been organized primarily to protect and safeguard THIS segment of the radio-television industry. To this end it has already and will always counter attack any group or individual who would defame the basic honesty and integrity of the television servicing profession, or would attempt to use it as a scapegoat for any reason; or would attempt to deprive its members of their basic rights and privileges to earn decent livelihoods as respected persons in their communities.

The secondary functions of the national group are:

1. To promote a better understanding between the servicing and other segments of the industry.

2. To promote and secure better relations with the public.

3. To provide educational facilities for its members.

4. To raise the standards of the servicing profession.

5. To cooperate with federal, state, and municipal agencies on matters pertaining to security, ethics, safety, etc.

Perhaps of even greater importance than the energy and zeal of the organizations that started this new national group is its timing. If the many thousands of servicemen throughout the country who have felt the need for such an organization will rise to the occasion now, and form or revive their own local and state associations; and then spur them on to join up with the national group - a powerful and lasting body will result. Otherwise, failure - and those who have endured and survived the serviceman's lot in the last two decades know what that means.

- Sam Marshall

BOOK REVIEW

FM SIMPLIFIED
Second Edition
by
Milton S. Kiver

Published by D. Van Nostrand Company, Inc.

This well-written, well-illustrated text covers thoroughly the theory of FM. It is written to explain in detail the differences between FM and AM, and devotes three chapters to the fundamental theory.

Another full chapter is devoted to an explanation of the transmission, propagation and reception of FM signals, and covers such details as antenna theory and installation.

Several chapters are devoted to an explanation of various commercial receivers and receiver practices. Information contained here is correlated to the earlier chapters on fundamentals.

Following the explanation of various commercial equipment, a thorough treatment is given the alignment and servicing procedures for receivers as they are at present being supplied commercially.

The theory and practice of most of the present day FM transmitters are also covered adequately with pictures and diagrams of various pieces of commercial equipment. Because of the method of presentation, it should be possible for anyone with a good working knowledge of AM radio to understand and be well versed in FM practices.

* * *

An ingenious idea for the saving of valuable time is the following one presented by Mr. Kingrey. It is well worth the $5.00 we offer for new ideas on "How to Use PHOTOFACTS."

> "I have saved much time by the use of a red pencil. When servicing a receiver, I pull the Photofact Folder and draw a red circle on the schematic diagram around the parts found to be defective. Also, I mark the parts list. In this way the parts which have been defective on this run of receivers are marked and are immediately apparent the next time I have to service one of these receivers. I find this particularly helpful since weak parts seem to run in cycles, and consequently I save my time in locating such defective parts in the equipment I service."

M. Kingrey
1715 Gummer Avenue
Dayton 3, Ohio

* * *

FIELD EXPERIENCES

For every "Field Experience" published, we issue a certificate good for one PHOTOFACT Folder Set. Awards are issued at the time of publication. Since it is impossible to verify the accuracy of contributions, we cannot be responsible for either the diagnosis made of the receiver trouble, or the results which will be obtained by following the suggested repair routine. All contributions become the property of Howard W. Sams & Co., Inc.

RCA TC167, Chassis KCS40A
Photofact Set No. 109, Folder No. 11

Complaint: Ball bearing falls out of channel selector.

Remedy: Buy some copper-coated BB shot and solder one in place. After doing this, I have never had any more trouble with this failure.

Warren Waters
604 Main Street
Covington, Kentucky

* * *

SYLVANIA TV Model 7130B
Photofact Set No. 124, Folder No. 10

Complaint: Picture rolls horizontally. Vertical blanking bar can be moved back and forth across the screen by adjusting the horizontal discriminator transformer.

Remedy: Replace capacitor (Item C70) and readjust the horizontal oscillator in accordance with the instructions contained on page 11 of the Photofact Folder.

John McGowan
Red's Radio & Electric Shop
White Pigeon, Michigan

* * *

PHILCO 48-1253
Photofact Set No. 36, Folder No. 17

Complaint: Set was dead - it would play neither on radio nor phonograph. All tubes checked okay.

Remedy: Filter capacitor (Item No. 7) was found to be open. Replacement of this capacitor with the proper unit restored the set to operation.

Jerome Vogel
Jerry's Radio Service
2004 Brownsville Road
Pittsburgh 10, Pennsylvania

* * *

ZENITH H880RZ, Chassis 8H20
Photofact Set No. 114, Folder No. 12

Complaint: This trouble is peculiar to broadcast receivers although it is relatively common to transmitter equipment. The first indications were no broadcast reception, with FM weak and fading out entirely after a short period of operation.

The odd and surprising part was that visual observation showed the 12AT7 tube plates red hot, as would be the case with a shorted filter on a rectifier tube. It appeared that the tube was operating without bias, and voltage test showed this to be correct, as no grid voltage was present. The plate voltage was low, as was the screen voltage for the 12BA6 IF tubes.

Due to the wiring of this chassis, plate voltage was present although the 1300 ohm section of the wire

wound resistor (Item 41A) was open and was causing the trouble.

Remedy: The replacement of this resistor applied correct plate voltage to the 12AT7, and with the oscillator functioning, the grid bias was developed and the set operated normally.

Frank L. Dodd
11 N. Second Street
Lewisburg, Pennsylvania

* * *

GENERAL ELECTRIC 10C101
Photofact Set No. 96, Folder No. 4

Complaint: When set is first turned on, picture and sound are okay. After 3 to 5 minutes of operation, picture is reduced in size and does not fill mask.

Remedy: Check of the output voltage on selenium rectifier (Item M1) indicated 50 volts. Replacement of this rectifier with the recommended unit restored the voltage to its normal level and the set operated correctly.

Joseph Lee Kemp
R. F. D. #4
Frederick, Maryland

* * *

ANDREA TVL-12
Photofact Set No. 123, Folder No. 3

Complaint: No picture or sound.

Analysis: Visual examination showed that the tube filaments were not lighting, and although 6.3 volts AC could be read at the tie strip where the leads come from the transformer, no reading could be obtained at the tube sockets. The trouble was traced to the eyelet which fastened the solder terminal to the fibre strip.

Remedy: Application of a good hot soldering iron to this eyelet removed the lacquer and allowed normal operation of the receiver.

Paul P. Garatoni
60 Hawkins Street
Derby, Conn.

* * *

ZENITH H-2352RZ
Photofact Set No. 118, Folder No. 11

Complaint: Insufficient width and poor focus.

Repair: Check R107, 10,000 ohm, 2 watt carbon resistor for decrease in value. Replacement of this item with the correct part will remedy the trouble.

ZENITH H-2352RZ
Photofact Set No. 118, Folder No. 11

Complaint: Instability of vertical and/or horizontal oscillator.

Cause: Poor contact between rivited lug strip (ground to terminal) and chassis. Also caused by poor contact between tube socket retaining ring rivets and ground.

Remedy: Solder all retaining rings to chassis and solder all lug strips used as tie points to ground with a clean hot soldering iron.

ZENITH G2346R, Chassis 23G22
Photofact Set No. 98, Folder No. 17

Complaint: Loss of horizontal sync.

Remedy: Check capacitor (Item C74) for excessive leakage. Replace capacitor to restore receiver to normal operation.

ZENITH G2346R, Chassis 23G22
Photofact Set No. 98, Folder No. 17

Complaint: Loses horizontal sync when input signal is interrupted during a station break or a change of program.

Remedy: Check capacitor (Item C90), resistors (Items R113 and R114) for change in value. A good procedure on these models to prevent future service calls, is to replace these resistors with 1 watt units since they are subjected to a rather high pulse from the horizontal output stage.

GENERAL ELECTRIC 14C, 16C, 16T,
and 17C Series
Photofact Set No. 123, Folder No. 4

Complaint: Very dim or no raster, although high voltage checks okay.

Remedy: Check capacitor (Item C83), from the 12AU7 vertical output plate to the grid of the vertical blanking stage, for leakage. Replacement of this capacitor will restore the receiver to normal operation.

GENERAL ELECTRIC 14C, 16C, 16T,
and 17C Series
Photofact Set No. 123, Folder No. 4

Complaint: Premature failure of the 1X2 filament.

Remedy: Check each receiver to make certain that it has Item R126, a 1.2 ohm 1/2 watt resistor, in series with the 1X2 filament leads. When adding this resistor, make certain that all precautions are taken to prevent corona discharge. The use of high voltage spaghetti and high voltage tape will help reduce such discharge.

GENERAL ELECTRIC 10C, 10T, 12C
and 12T Series
Photofact Set No. 96, Folder No. 4

Complaint: Loss of horizontal sync during station break or change of programs.

Remedy: Check capacitor (Item C104) for leakage since it is subjected to a high voltage pulse from the horizontal output stage.

Editor's Note: All seven above Field Experiences were submitted by:

Eugene Kilinedinst
East End Radio & Television
1031-1033 East Market Street
York, Pennsylvania

EMERSON 611
Photofact Set No. 76, Folder No. 11

Complaint: Receiver took too long to come on.

Cause: Defect was traced to the selenium rectifiers in the power supply. Each rectifier was checked carefully and replacement of the defective one restored the receiver to operation.

TELE-TONE 201
Photofact Set No. 74, Folder No. 9

Complaint: No sound.

Cause: Capacitor (Item C9) across output transformer was shorted.

Remedy: Replace capacitor.

REGAL 1107
Photofact Set No. 41, Folder No. 19

Complaint: Rapid burnout of resistor (Item 22) accompanied by loss of audio.

Cause: Capacitor (Item 7) was found to be itermittently shorted.

Remedy: Replace capacitor.

EMERSON 559-A, Chassis 120059
Photofact Set No. 31, Folder No. 12

Complaint: Excessive oscillation on station.

Analysis: Defective capacitor (Item 8) from 3Q4 plate to ground. Replacement of the capacitor restored the receiver to normal operation.

EMERSON 540A
Photofact Set No. 20, Folder No. 10

Complaint: Reception was weak and distorted. Local oscillator operated only intermittently.

Remedy: Complete realignment of the tuning slugs in accordance with the Photofact Folder restored the receiver to normal operation.

Editor's Note: All five above Field Experiences were submitted by:

Milton's Radio Repair
65 South Fifth Avenue
Coatesville, Pennsylvania

* * *

MANTOLA R-662
Photofact Set No. 3, Folder No. 33

Complaint: Receiver would play satisfactorily for a short while and then go dead.

Analysis and Repair: All plate and screen voltages were correct. All resistance readings checked okay.

It was found that the second IF was dead, and upon checking the control grid voltage on this stage, we found that the tube was biased beyond cutoff. The trouble turned out to be a defective mica capacitor (Item No. 20). The unit checked between 500 and 600 megohms when cold, but its resistance rapidly decreased with heat. The replacement of the capacitor repaired the receiver.

C. R. Couch
Gainesville, Florida

* * *

WESTINGHOUSE H604T10
Photofact Set No. 99A, Folder No. 14
Supplement to H609T10
Photofact Set No. 95, Folder No. 7

Unless this receiver was carefully tuned, a pattern resembling weak diathermy interference appeared on channel 7. This pattern seemingly was the result of a harmonic from the IF sound carrier. This harmonic got into the tuner via the B+ lead and beat against the incoming video signal. The interference was cured by placing a .01 Mfd. disc ceramic capacitor from B+ to ground. An orange lead runs from the tuner to a terminal strip where the lead connects to a B+ bus. On the terminal strip there is a grounded lug next to the B+ connection. The .01 Mfd. disc ceramic capacitor should be connected between the B+ lug and the grounded lug. Be sure the capacitor leads are as short as possible.

Hartland B. Smith
467 Park Avenue
Birmingham, Michigan

* * *

GENERAL ELECTRIC 12C109
Photofact Set No. 125, Folder No. 7

Complaint: No raster on picture tube. Sound okay.

Cause: Open screen dropping resistor on 19BG6 tube.

Remedy: Remove coil which is mounted directly below the socket on the rear apron of the receiver, and space is readily available to remove the offending resistor. The resistor appeared to be mounted too tightly, and the constant contraction and expansion, due to heat, caused it to break. Replacement of the resistor with the recommended unit effected the repair.

RCA 9T240
Photofact Set No. 74, Folder No. 8

Complaint: Raster present, but no picture modulation. A heavy, dark line appeared across the face of the tube accompanied by distorted sound.

Cause: Cathode-to-heater short in 6AG5 (V5) second video IF amplifier.

Remedy: Replacement of the tube brought operation of the receiver back to normal.

Editor's Note: Both above Field Experiences were submitted by:

The Radio Shack
1602 West Pratt Street
Baltimore 23, Maryland

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 4 SET 126

Crosley Models 11-443MU and 11-473BU are identical to Model 11-442MU except for the following:

R54 changed to 27KΩ

A .005MFD capacitor added from Pin 4 of V13 to ground.

C36 not used.

C71 changed to 820MMF.

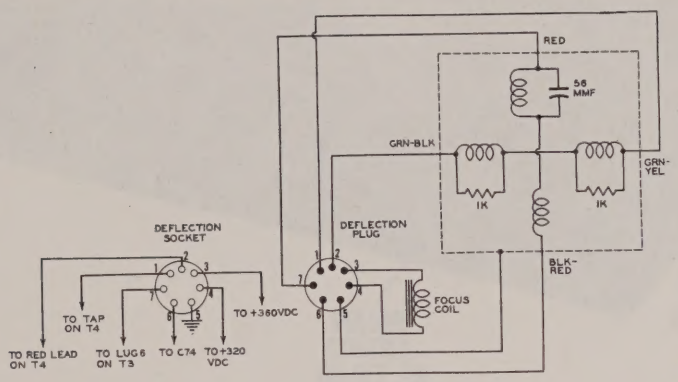
R101 changed to 22KΩ.

R102 changed to 22KΩ .

C77 changed to .1MFD.

The power transformer changed to Part # C149559.

A 7 pin socket and plug was added in the deflection circuit. The leads from the deflection yoke and focus coil are connected to the plug. A partial schematic below shows the connections to the socket and plug.



CROSLEY MODELS 11-443MU, 11-473BU

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 13 SET 128

The following table lists new Sparton Models with their chassis designation.

MODEL	TV CHASSIS
5025BA (Table)	26SS170
5075BA, 5076BA, 5077BA (Console)	26SS170
5079B, 5080C (Consolette)	26SD170
5082, 5083 (Combination	26SD170X or 26SD170XP
5101, 5102, 5103 (Table)	26SS170 or 26SS170P
5104, 5105 (Table)	26SS170D or 26SS170DP
5152, 5153, 5154 (Console)	26SS170 or 26SS170P
5158 (Console)	26SD170 or 26SD170P
5182, 5183 (Combination)	26SD170 or 26SD170P
5188, 5189 (Combination)	26SD170 or 26SD170P

The above models are electrically identical to Sparton Models 5025 thru 5090 covered in Photofact Folder 13 Set 128 except for the following:

Chassis coded with the suffix letter "D" have increased shaft length for controls R2, R3, R4 and R5.

Chassis coded with suffix letter "P" use a PM focus unit. When the PM focus unit is employed items T7, R6, R110 and R111 are omitted and a 270Ω 10 watt resistor is added in place of T7.

Chassis coded with the suffix letter "X" use a line cord antenna and the dipole antenna is omitted.

Chassis coded with two suffix letters have the changes included as indicated by each letter.

SPARTON MODELS 5025BA, 5075BA, 5076BA, 5077BA, 5079B, 5080C, 5082, 5083, 5101, 5102, 5103, 5104, 5105, 5152, 5153, 5154, 5158, 5182, 5183, 5188, 5189.

PRODUCTION CHANGES
BULLETIN 22

PRODUCTION CHANGES
BULLETIN 22

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AIRCASTLE
MODELS 607.316, -1, 607.317, -1

AIRCASTLE
MODELS 607.316, -1, 607.317, -1

AIRCASTLE MODEL 607-316-1

TRADE NAME	Aircastle, Models 607-316, 607-316-1, 607-317, 607-317-1
SUPPLIER	Spiegel Inc., 1061 W. 35th. St. Chicago 9, Illinois
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types 12BE6 Converter, 12BA6 IF Amp., 12AV6 DET.-AVC-AF, 50C5 or 35B5 Power Output, 35Z5GT or 35Z4GT or 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC/DC — RATING .250 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning cap fully closed and set pointer to last reference mark at low frequency end of dial.
Use isolation transformer if available. If not connect a .1MFD capacitor in series with low side of signal generator and B-.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to stator on rear section of tuning gang. Low side to B-.	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1620KC	"	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1400KC	Tune for max. output.	"	A5	"

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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PARTS LIST AND DESCRIPTIONS

AIRCASTLE
MODEL 607-316-1

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Detector-AVC-AF Amplifier	12AV6	12AV6	7BT	
V4A	Power Output	50C5	50C5	7CV	
B	Power Output	35B5	35B5		
V5A	Rectifier	35Z5	35Z5	6AD	
B	Rectifier	35Z4	35Z4	5AA	
C	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRCASTLE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	60	150	N-7204	PRS150/50-30		EDL42215		TVA-2450	Filter
B	20	150							Filter †
C2	.05	200	N-1345	P288-05	DF-503	PTE4S5		2TM-S5	Ant. Isolation
C3	.05	200	N-1345	P288-05	DF-503	PTE4S5		2TM-S5	Tuning Cap. Isolation ‡
C4	100		N-7549	S1100N750	TCN-100		N750L-101		Fixed Trimmer *
C5	100		N-6015	S1100	D6-101	5W5T1	GP1K-101	19C11	Diode RF Filter
C6	.005	600	N-4894	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
C7A	250		♦	S1250	♦	5W5T25	GP2K-251	1FM-325	AF Amp. Plate
B	.01			P488-01	PC-71	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C8	.01	400	N-1344	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Output Plate
C9	.05	400	N-1346	P488-05	DF-503	PTE4S5		4TM-S5	Rectifier Plate
C10	.05	200	N-1345	P288-05	DF-503	PTE4S5		2TM-S5	Line Isolation

† Some models use 50-30MFD @ 150V-Mfgrs. Part # N-7889 in this application.
‡ Not used in all models.
* This item required only with IF transformer Part # N-7542
♦ Items C7A, C7B, R6A, R6B, are compined in one unit in some models

CONTROLS

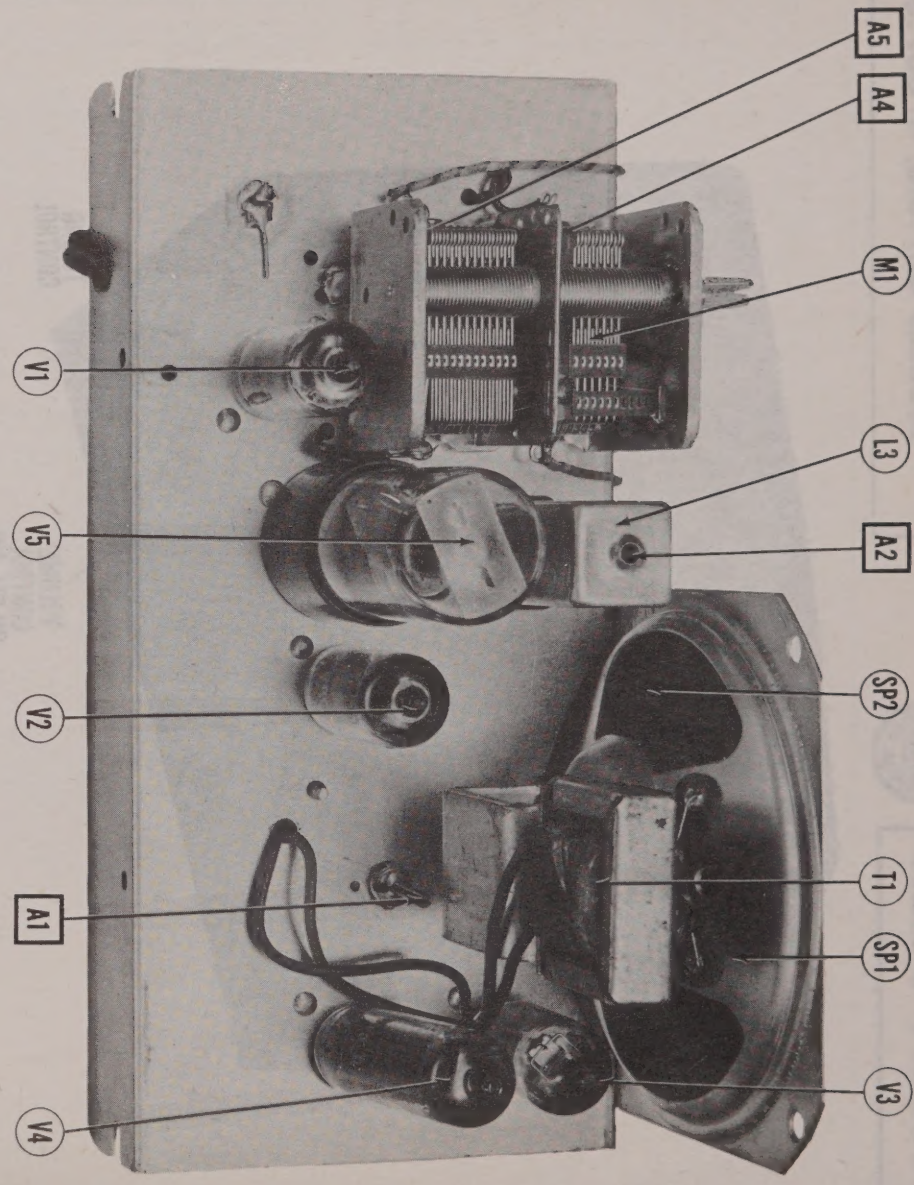
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRCASTLE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½	N-7890	Q13-133	AG-60-Z	BSK-60-S	Volume Control
B	Shaft		Not req.	Not req.	KSS-3	Not req.	Attach to R1A per instructions
C	Switch		Not req.	76-1	SWB	Not req.	Attach to R1A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRCASTLE PART No.	IRC PART No.	IDENTIFICATION CODES
R2	18KΩ	½	N-4025	BTS-18K	Osc. Grid - See Note 2
R3	1Meg.	½	N-1262	BTS-1Meg.	AVC Network
R4	68Ω	½	N-6485		IF Amp. Cathode - See Note 4
R5	5Meg.	½	N-4028	BTS-4.7Meg.	AF Amp. Grid - See Note 3
R6A	220KΩ	½	♦	BTS-220K	AF Amp. Plate
B	470KΩ	½		BTS-470K	Output Grid
R7	220Ω	½	N-4024	BTS-220	Output Cathode - See Note 4
R8	1200Ω	1	N-4900	BTA-1200	Filter
R9	33Ω	½		BW-½-33	Surge Limiter - Wire Wound - See Note 1
R10	68Ω	½		BW-2-68	Filament Dropping - See Note 5

♦ Items R6A, R6B, C7A, and C7B are combined into one unit.
Note 1 Not used in all models.
Note 2 Some models use 22KΩ Resistor in this application.
Note 3 Some models use 6.8Meg. Resistor in this application.
Note 4 Some models use series resistors in this application to obtain desired value.
Note 5 Used only in models with 35B5 Audio Output Tube.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIRCASTLE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2.5KΩ	3.7Ω	170Ω	.7Ω	Part of Speaker	A-3330 ①	A-2928 ①	R0-2 ①	① Bend mounting tabs down file out slots and mount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			AIRCASTLE PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V.C. IMP.		ST-113		
SP1	PM	3.7Ω	N7824	Model P4-X	4A1	
	CONE DIA.	V. C. DIA.				
SP2	4"	9/16				

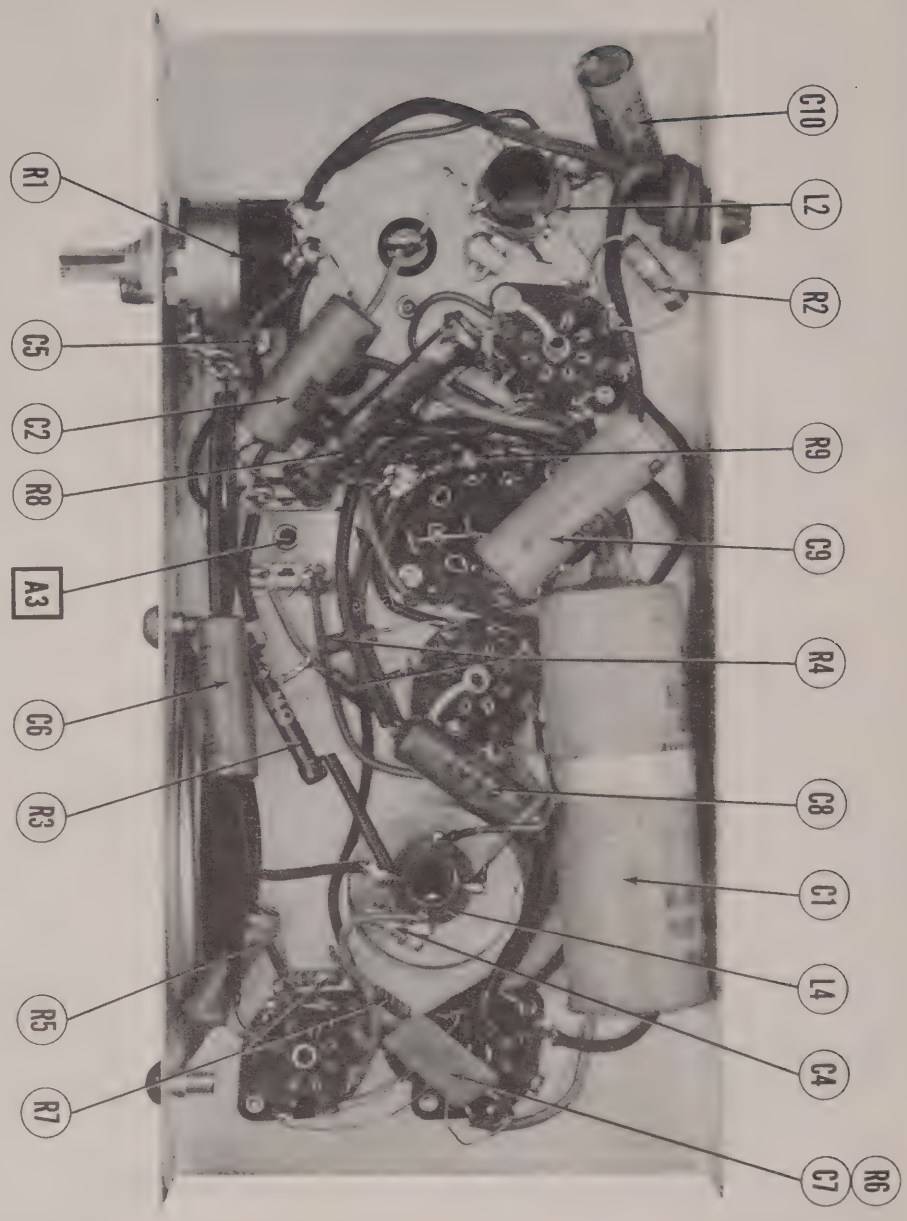
R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	AIRCASTLE PART No.	MEISSNER PART No.	
L1	Loop Ant.			N-8138		
L2	Osc. Coil	1Ω	8Ω	N-7139	14-1073	Connect 50MMF. Capacitor from high side of tuning cap to Osc. Grid
L3	Input IF	15Ω	15Ω	N-7888		
L4	Output IF	22.5Ω	22.5Ω	N-7542		

MISCELLANEOUS

ITEM No.	PART NAME	AIRCASTLE PART No.	NOTES
M1	Tuning Cap.		(44-432MMF, 35-150MMF)

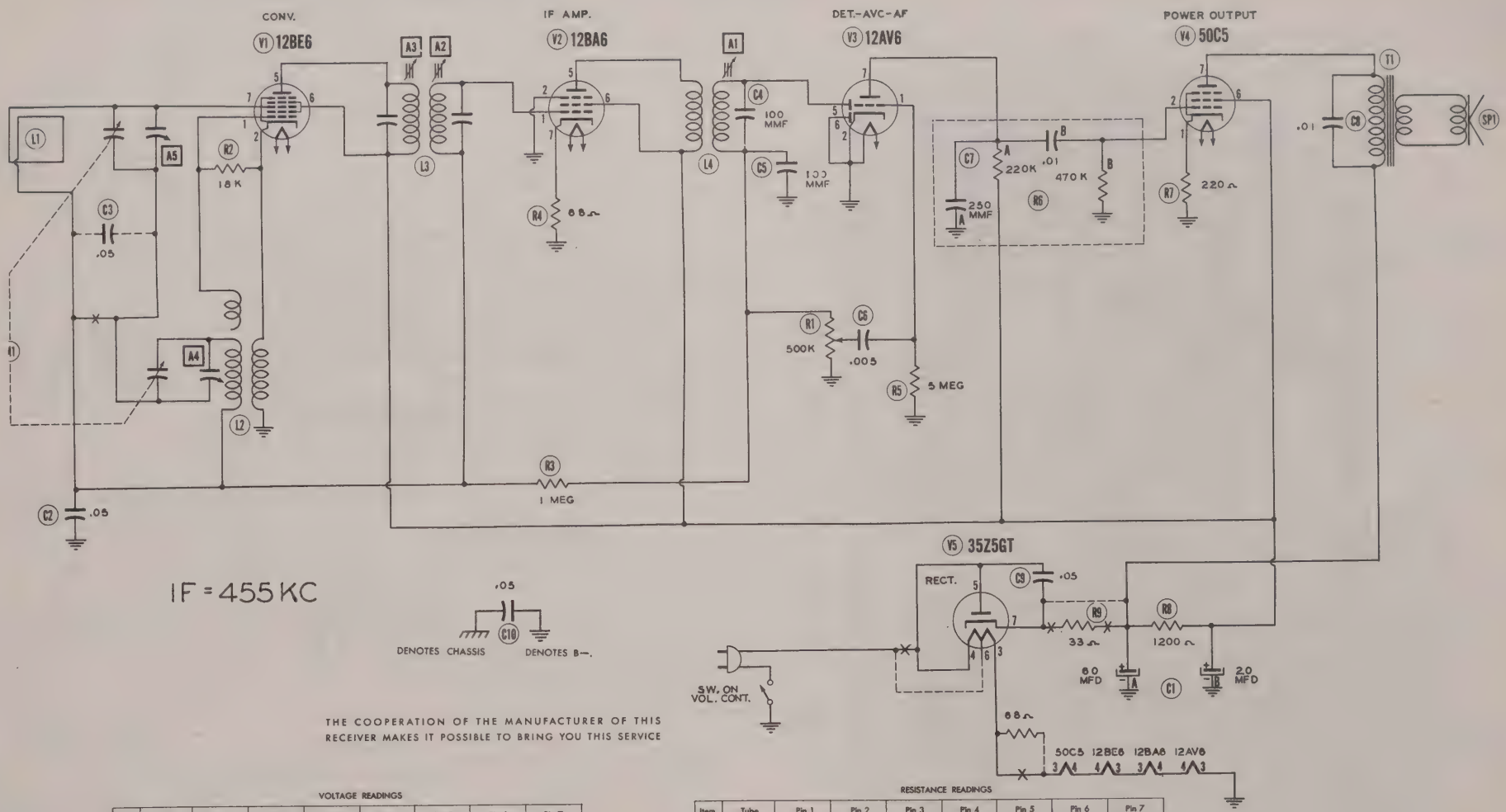
CHASSIS—BOTTOM VIEW



SET 138 FOLDER 2

AIRCASTLE MODEL 607-316-1

AIRCASTLE MODEL 607-316-1



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VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	*-9VDC	0V	93VAC	35VAC	90VDC	90VDC	-.2VDC
V 2	12BA6	-.2VDC	0V	23VAC	11VAC	90VDC	90VDC	.7VDC
V 3	12AV6	-.4VDC	0V	0V	11VAC	-.4VDC	0V	65VDC
V 4	50C5	7VDC	0V	80VAC	35VAC	0V	90VDC	120VDC
V 5	35Z5	0V	117VAC	105VAC	80VAC	117VAC	125VDC	80VAC

* TAKEN WITH VTVM

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	18KΩ	.5Ω	26Ω	38Ω	†1200Ω	†1200Ω	1.5Meg.
V 2	12BA6	1.5Meg.	0Ω	26Ω	14Ω	†1200Ω	†1200Ω	68Ω
V 3	12AV6	5Meg.	0Ω	0Ω	14Ω	500KΩ	0Ω	†220K
V 4	50C5	220Ω	470KΩ	90Ω	38Ω	†Inf.	†1200Ω	†200Ω
V 5	35Z5	0Ω	120Ω	110Ω	90Ω	120Ω	50KΩ	90Ω

† TAKEN FROM PIN 8 OF V5

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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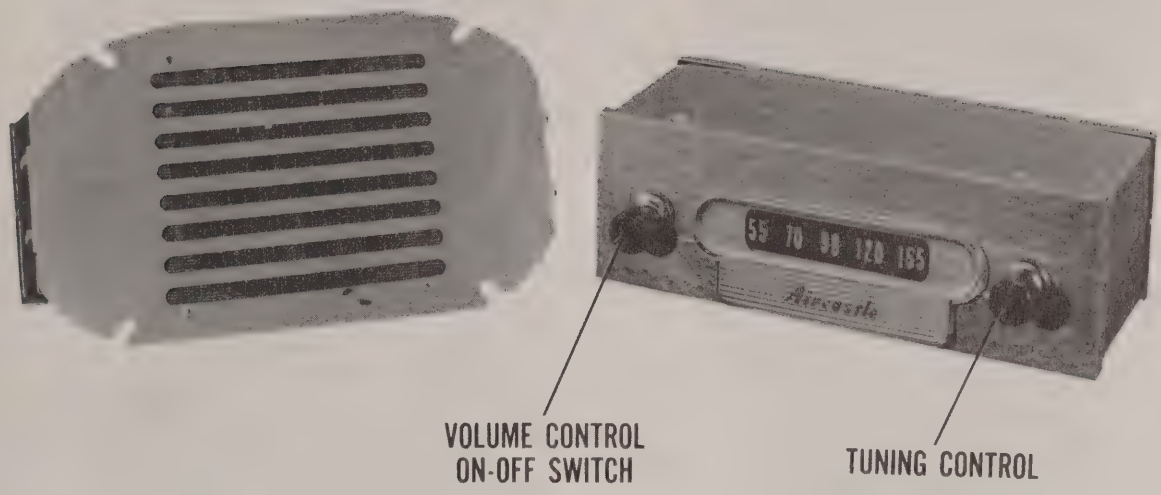
138-2

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

AIRCASTLE
MODEL 610.F100



AIRCASTLE
MODEL 610.F100

TRADE NAME	Aircastle, Model 610.F100
SUPPLIER	Spiegel, Inc., 1061 W. 35th St., Chicago, Illinois.
TYPE SET	Battery Operated Custom Built Automotive Superheterodyne Receiver
TUBES (SIX)	Types 6BA6 RF Amp., 6BE6 Converter, 6BA6 IF Amp., 6AT6 DET-AVC-AF, 6AQ5 Power Output, 6X4 Rectifier
POWER SUPPLY	6 Volt Storage Battery — RATING 5.1 Amp. at 6 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning gang fully closed and set right hand edge of pointer carriage 2 31/32" from edge of chassis at the low frequency end of dial.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (Grid) of 6BE6 (V2) Low side to chassis	455KC (400∿ Mod)	Tuning gang fully open	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	100MMF	High side to pin 1 (Grid) of 6BA6 (V1) Low side to chassis	1600KC	"	"	A5	"
3.	100MMF	High side to antenna lead. Low side to chassis.	1400KC	Tune for max. output.	"	A6	"
4.	100MMF	"	"	"	"	A7	"
5.	100MMF	"	600KC	"	"	A8	"
6.	100MMF	"	600KC	"	"	A9, A10	"

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amp.	6BA6	6BA6	7BK	
V2	Converter	6BE6	6BE6	7CH	
V3	IF Amp.	6BA6	6BA6	7BK	
V4	DET.-AVC-AF	6AT6	6AT6	7BT	
V5	Power Output	6AQ5	6AQ5	7BZ	
V6	Rectifier	6X4	6X4	5BS	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRCASTLE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	350	CE-86	AF64H4A		UP2235C		TVL-3636	■ Filter
B	20	350							▲ Filter
C2	.05	200	C207	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C3	.05	200	C207	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C4	.05	200	C207	P288-05	DF-503	PTE4S5		2TM-S5	Decoupling
C5	100		CC200	SI100	D6-101	5W5T1	GP1K-101	19C11	Osc. Grid Cap.
C6	.1	400		P488-1	DF-104	PTE4P1		4TM-P1	RF Bypass
C7	.05	200	C207	P288-05	DF-503	PTE4S5		2TM-S5	Decoupling *
C8	200		CC201	SI200	D6-201	5W5T2	GP2K-201	19C30	Diode RF Filter
C9	.006	400		P488-006	D6-562	PTE6D6	GP2-333-602	6TM-D6	Audio Coupling
C10	200		CC201	SI200	D6-201	5W5T2	GP2K-201	19C30	AF Amp. Plate
C11	.01	600	C206	P688-01	D6-103	PTE6S1	821-01	6TM-S1	Audio Coupling
C12	.5	100	C209	P185-5				68P20	Hash Filter
C13	.02	600		P688-02	DF-203	PTE6S2		6TM-S2	Output Plate
C14	.008	1600	C205	P1688-0075		PTE16D8		MB-D8	Buffer
C15	.5	100	C209	P185-5				68P20	Hash Filter

* Not used in all models

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRCASTLE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	750KΩ	½	RV-100	Q13-137	AG-79-Z	B-70-S	Volume control and switch
B	Shaft		Not Req	Not Req	FS-3	Not Req	Attach to R1A per instructions
C	Switch		Not Req	76-1	SWB	Not Req	Attach to R1A per instructions

RESISTORS

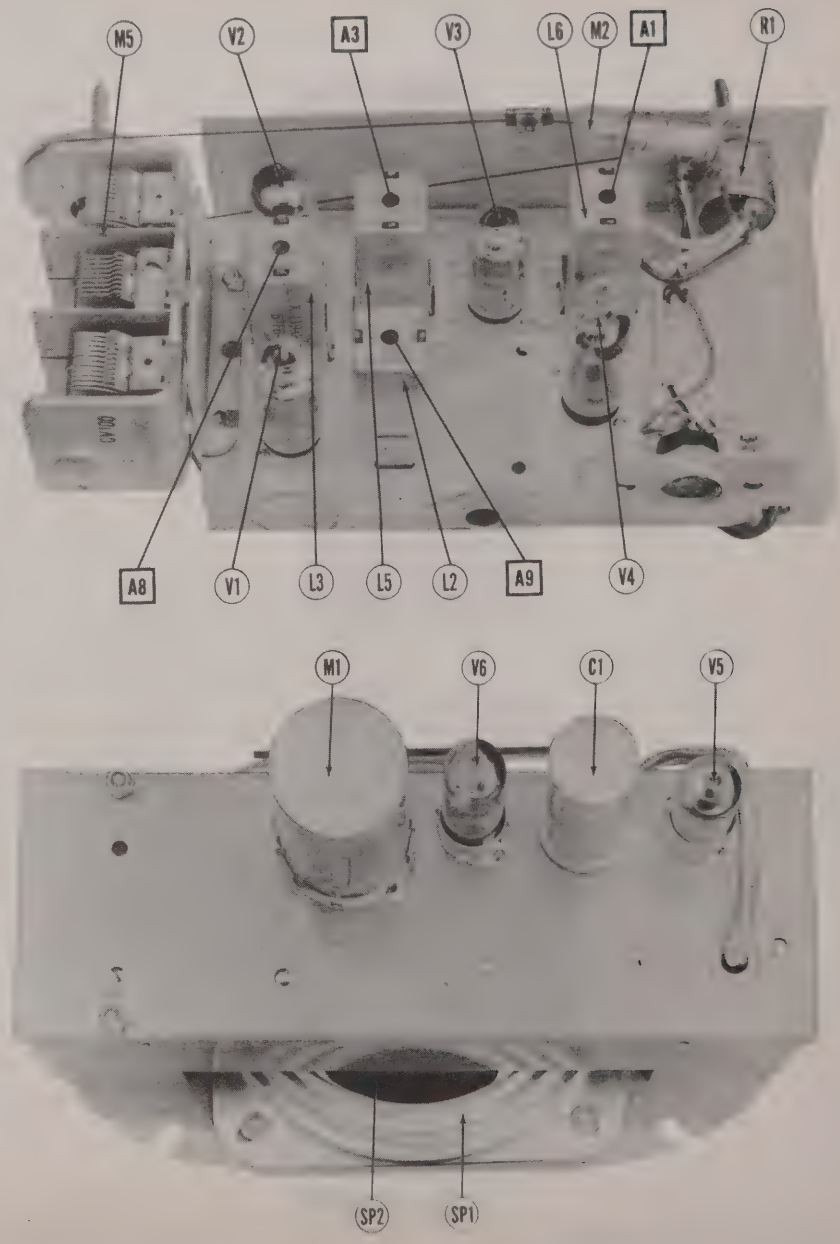
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRCASTLE PART No.	IRC PART No.	IDENTIFICATION CODES
R2	1Meg	½	R309	BTS-1Meg	AVC Network
R3	20KΩ	½	R306	BTS-22K	Osc. Grid
R4	1500Ω	½	R314	BTS-1500	IF Amp. Cathode
R5	20KΩ	2	R313	BT-2-22K	Screen Dropping
R6	2Meg	½	R310	BTS-2Meg	AVC Network
R7	10Meg	½	R311	BTS-10Meg	AF Amp. Grid
R8	240KΩ	½	R307	BTS-220K	AF Amp. Plate - See Note 1
R9	500KΩ	½	R308	BTS-470K	Output Grid
R10	330Ω	½	R303	BW-½-330	Output Cathode
R11	1000Ω	1	R312	BTA-1000	Filter
R12	100Ω	½	R301	BW-½-100	Hash Suppression
R13	100Ω	½	R301	BW-½-100	Hash Suppression
R14	300Ω	½	R303	BW-½-330	RF Amp. Cathode - See Note 2

Note 1 Some models use a 250KΩ Resistor in this application.
Note 2 Not used in all models.

TRANSFORMER (VIBRATOR)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: AIRCASTLE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	6VDC @ 3A	425VCT .038ADC			TV-100		P-2970	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIRCASTLE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	4800Ω	3.4Ω	400Ω	.7Ω	Part of SP1	A-3877	A-2930	R0-8	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			AIRCASTLE PART No.	VIKING PART No.	QUAM PART No.	
SP1	FIELD	V. C. IMP.	PM-705	525J4	52A21 ①	① Remount output transformer.
	PM	3.4Ω				
	CONE DIA.	V. C. DIA.				
SP2	5"	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	AIRCASTLE PART No.	MEISSNER PART No.	
L1	Ant. Loading	2Ω		L200		Includes Capacitor used as coil form
L2	Ant. Coil	14.5Ω	5Ω	57FM-3		
L3	RF Coil	90Ω	7.5Ω	57FM-4		
L4	Osc. Coil	10Ω			14-1073	Tap at 1.2Ω
L5	1st. IF	21Ω	21Ω	1655-16	16-6758	
L6	2nd. IF	21Ω	21Ω	1655-16	16-6758	
L7	Fil. Choke	0Ω		L203		
L8	Fil. Choke	.2Ω		L202		

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA			INSTALLATION NOTES
				AIRCASTLE PART No.	CORNELL-DUBILIER PART No.	RADIART PART No.	
M1	INT	6VDC	115v	V-83	5301	5301	

DIAL LIGHTS

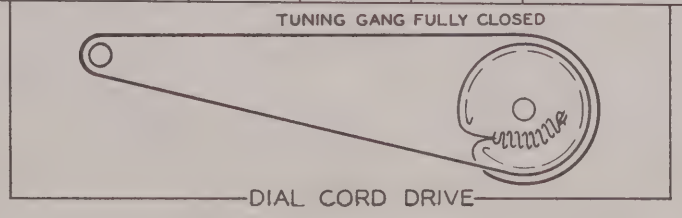
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					AIRCASTLE PART No.		
M2	Bayonet	6-8	.15	Brown	T47		Type #47

MISCELLANEOUS

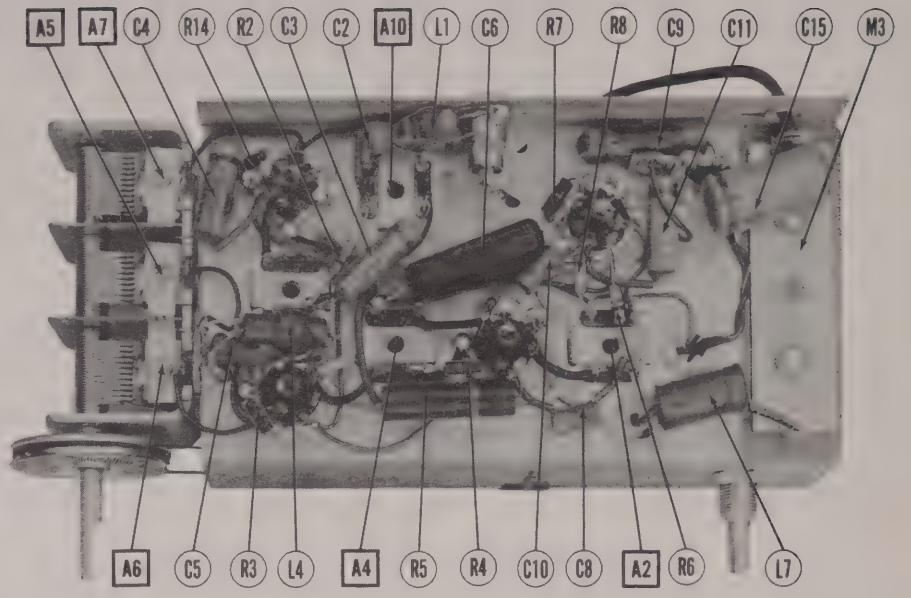
ITEM No.	PART NAME	AIRCASTLE PART No.	NOTES
M3	Spark Plate		
M5	3 Gang Var. Cap.	CV-100A	(20-402MMF, 16-403MMF, 33-217MMF)

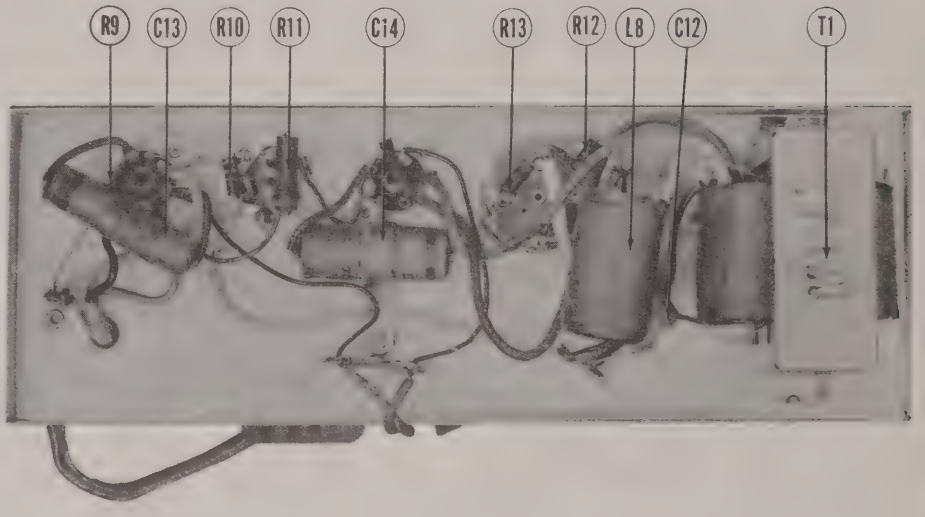
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			AIRCASTLE PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M4	3AG	15Amp.	A201		311015	155020A	



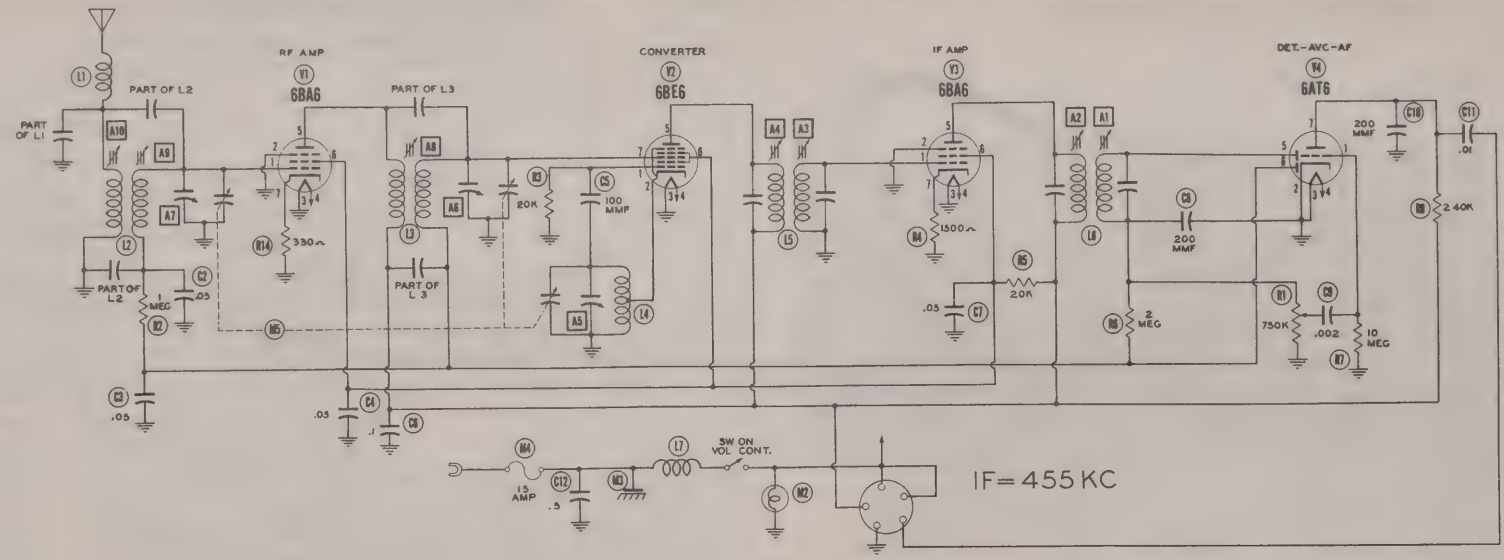
CHASSIS—BOTTOM VIEW

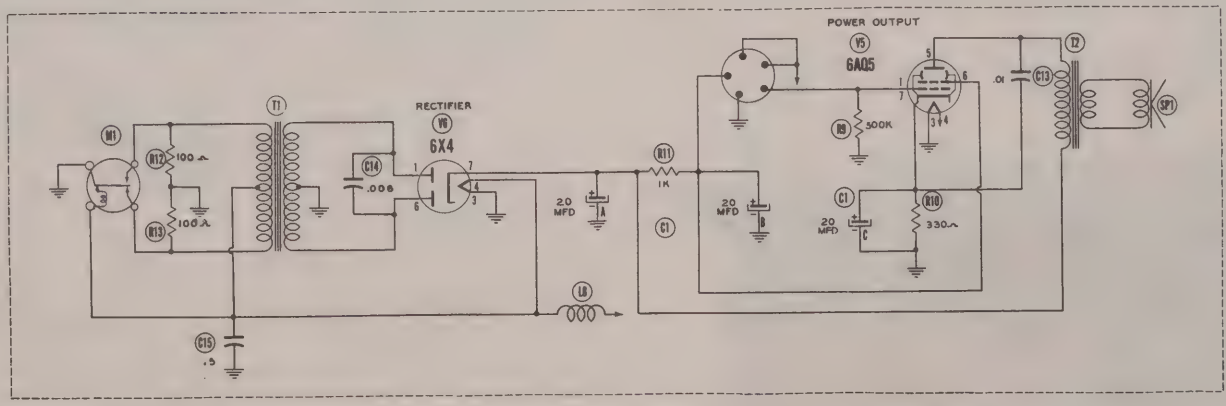




AIRCASTLE MODEL 610.F100

AIRCASTLE MODEL 610.F100





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6BA6	-.2VDC	0V	0V	6.3VDC	220VDC	70VDC	1.3VDC
V 2	6BE6	5-7.3VDC	0V	0V	6.3VDC	220VDC	70VDC	-.6VDC
V 3	6BA6	0V	0V	0V	6.3VDC	220VDC	70VDC	3.3VDC
V 4	6AT6	-.8VDC	0V	0V	6.3VDC	-.6VDC	-.6VDC	75VDC
V 5	6AQ5	0V	9.6VDC	0V	6.3VDC	330VDC	220VDC	0V
V 6	6X4	280VAC	0V	0V	6.3VDC	0V	280VAC	250VDC

‡ TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6BA6	3.7Meg	0Ω	0Ω	.1Ω	†1000Ω	†21KΩ	300Ω
V 2	6BE6	20KΩ	1Ω	0Ω	.1Ω	†1000Ω	†21KΩ	2.7Meg
V 3	6BA6	21Ω	0Ω	0Ω	.1Ω	†1000Ω	†21KΩ	1.5KΩ
V 4	6AT6	10Meg	0Ω	0Ω	.1Ω	750KΩ	2.7Meg	†240KΩ
V 5	6AQ5	500KΩ	330Ω	0Ω	.1Ω	†400Ω	†1000Ω	500KΩ
V 6	6X4	250Ω	Inf.	0Ω	.1Ω	Inf.	250Ω	500KΩ

† MEASURED FROM PIN 7 OF V6.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

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1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

*TRADE MARK

EMERSON MODELS
676D, 680B, 681D, 686B, 687B

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MODEL 680B

EMERSON MODELS
676D, 680B, 681D, 686B, 687B

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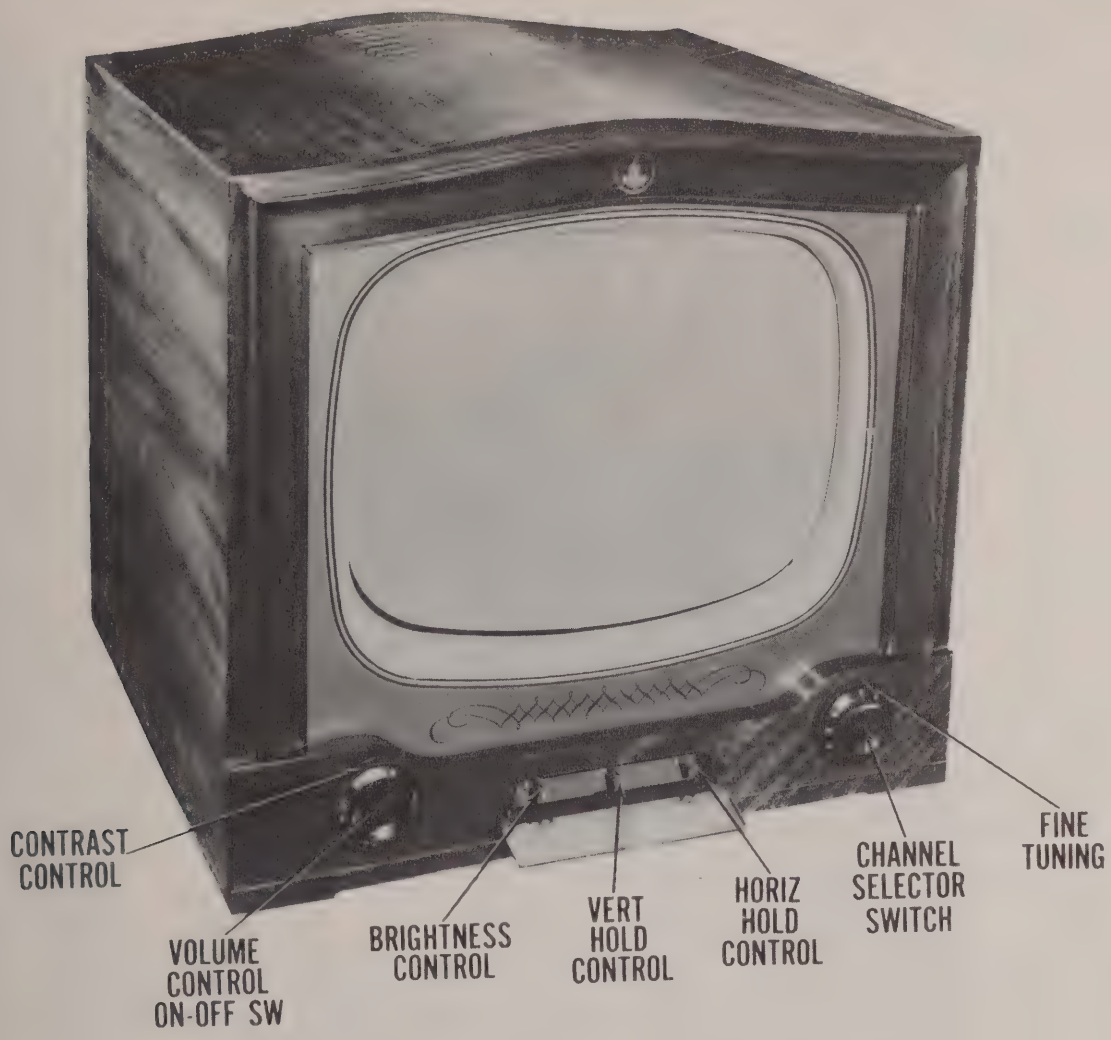
DATE 7-51 SET 138 FOLDER 4



EMERSON MODELS
676D, 680B, 681D, 686B, 687B

EMERSON MODEL 680B

TRADE NAME	Emerson, Model 676D, 680B, 681D, 686B, 687B (Ch. 120144-B)
MANUFACTURER	Emerson Radio & Phono Corp., 111 Eighth Ave., New York, N. Y.
TYPE SET	Television Receiver
TUBES	Twenty-three
POWER SUPPLY	110-120 Volts AC-60Cycle
RATING	1.85 Amp. @ 117 Volts AC
TUNING RANGE	CHANNELS 2 thru 13

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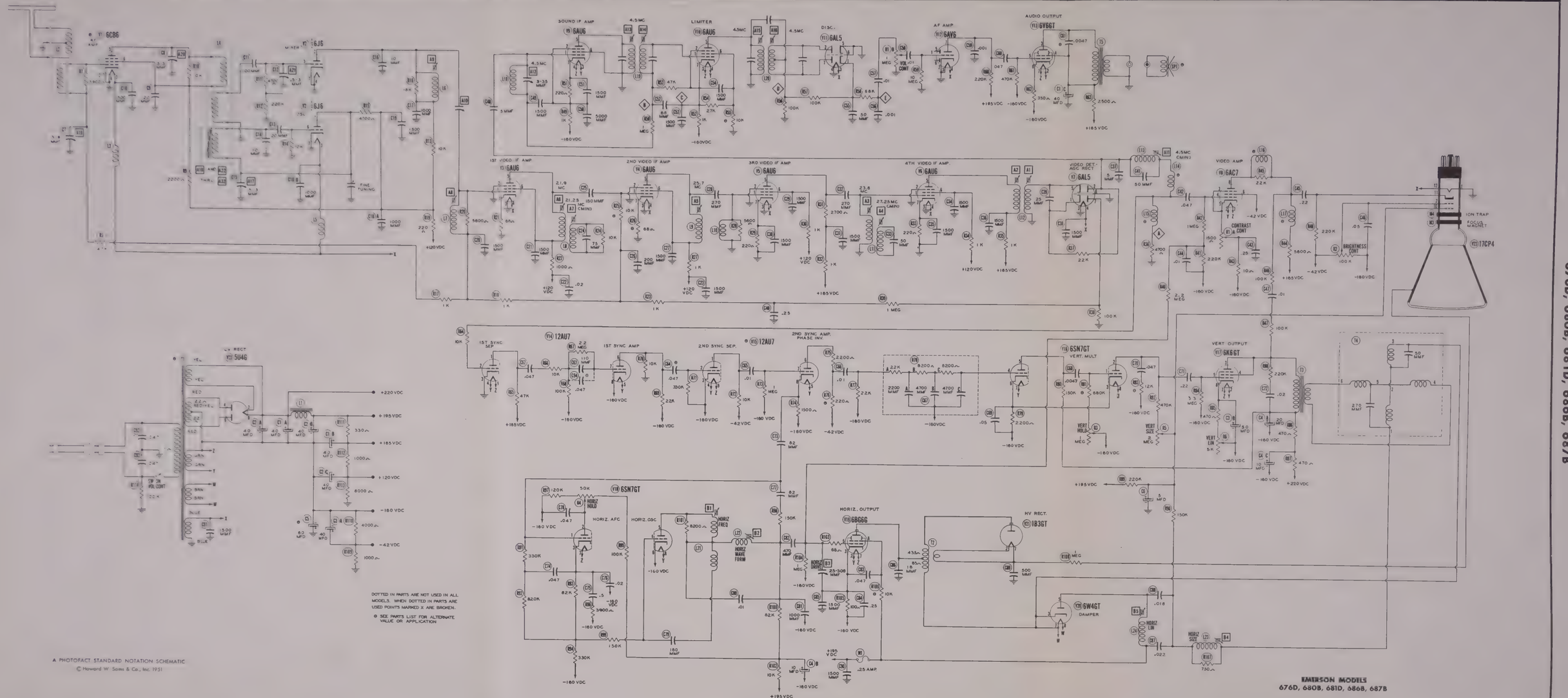
EMERSON MODELS
676D, 680B, 681D, 686B, 687B
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
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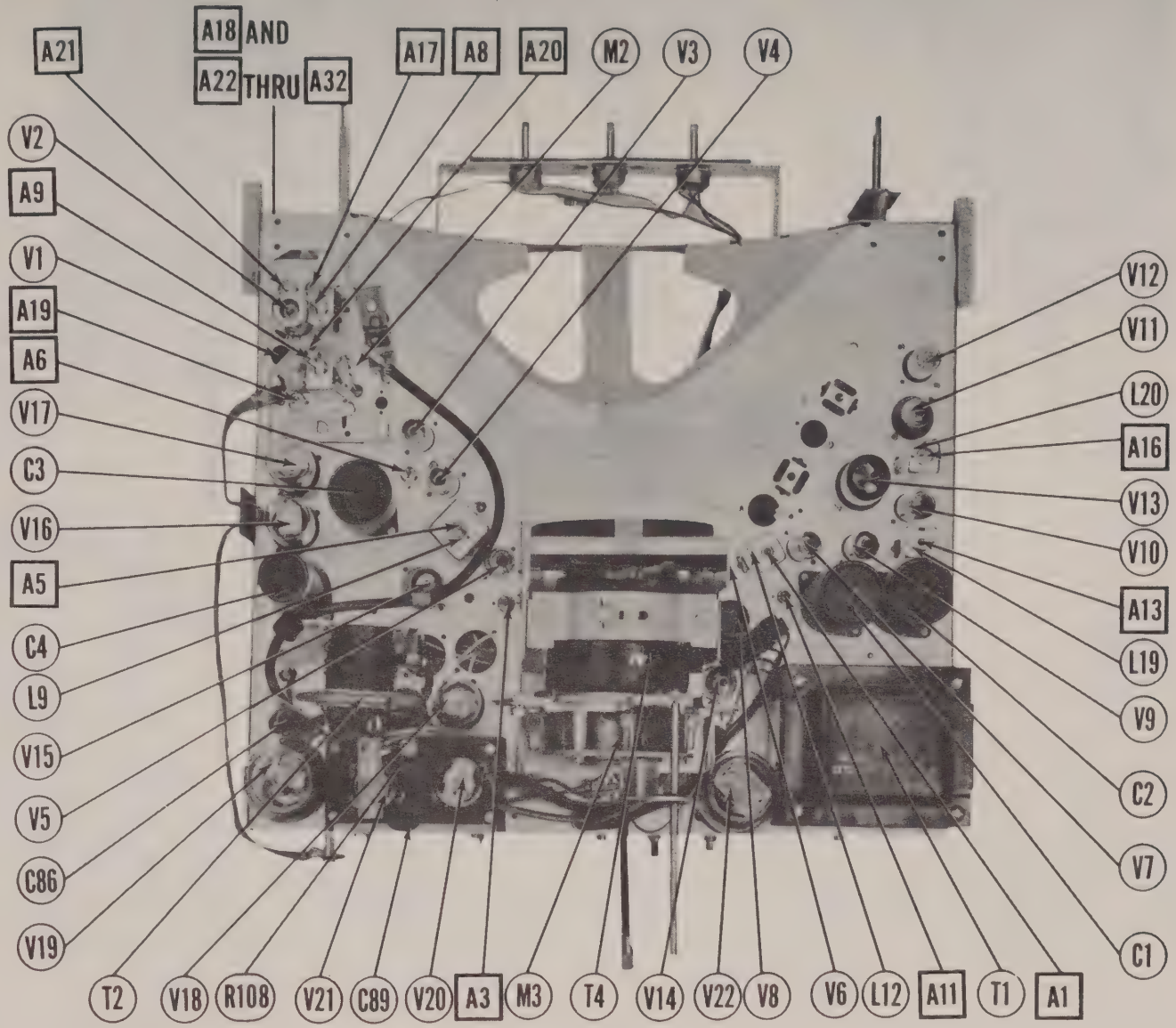
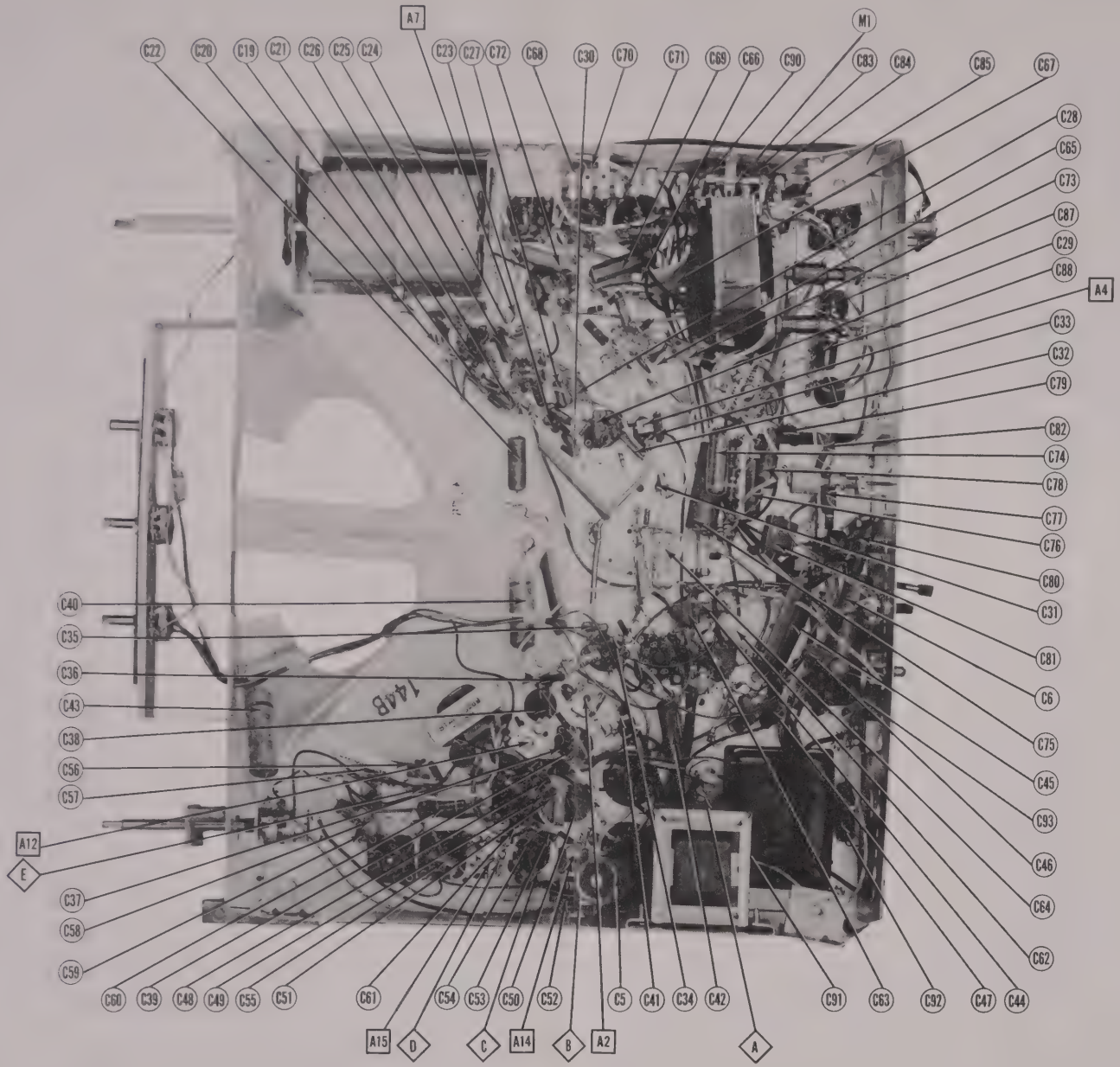
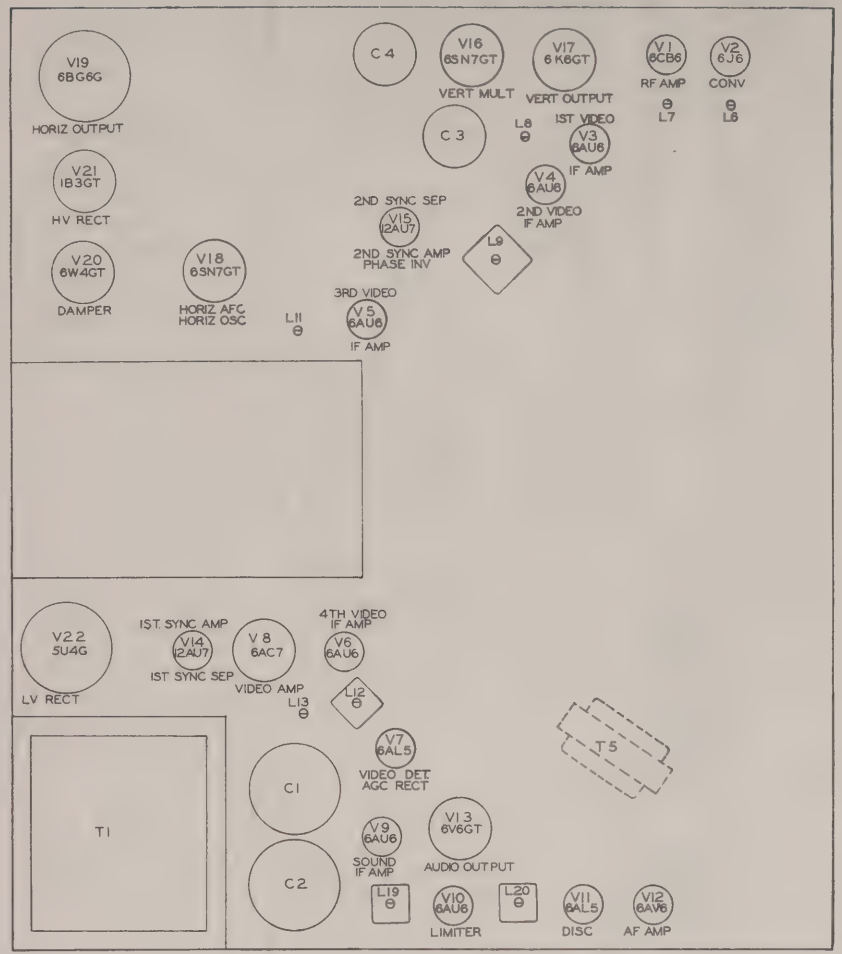
EMERSON MODELS
676D, 680B, 681D, 686B, 687B



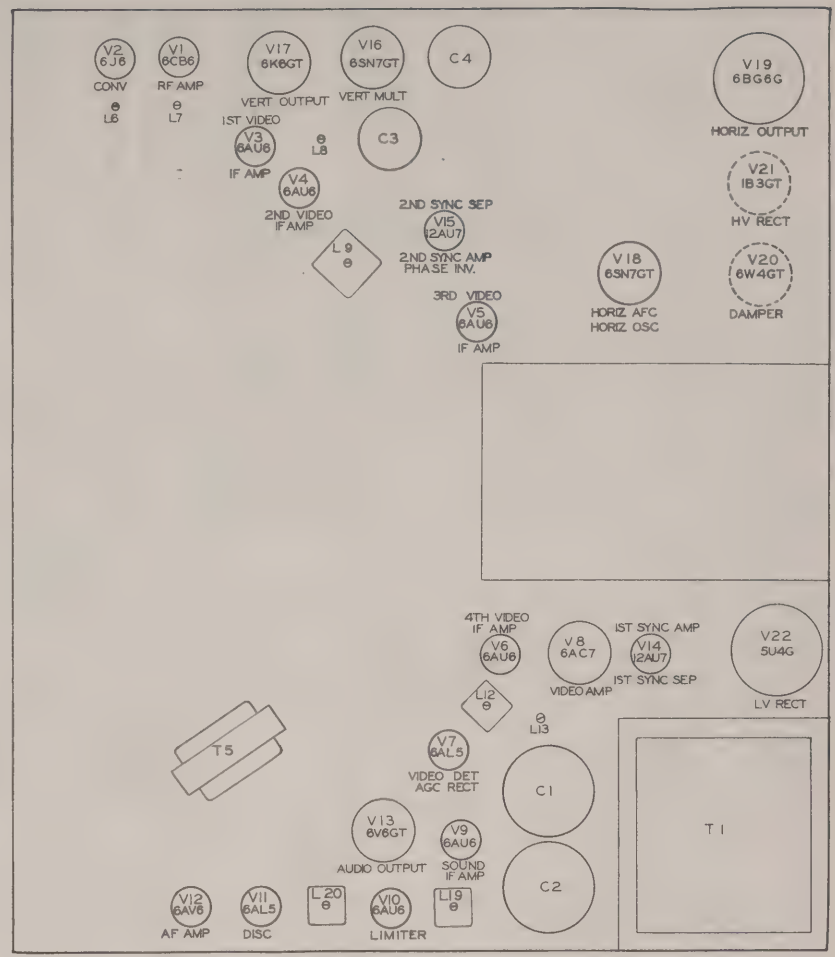
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



TOP VIEW



BOTTOM VIEW

TUBE PLACEMENT CHART

EMERSON MODELS

676D, 680B, 681D, 686B, 687B

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal oscillator tube, (V18), from its socket.

VIDEO IF ALIGNMENT

Remove the converter tube, (V2), and replace it with a 6J6 which has Pin 1 removed. This will disable the local oscillator and prevent the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to the ungrounded lead of C40, connect the positive lead to chassis.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001MFD	High side to Pin 1 (grid) of 6AU6, (V6). Low side to chassis.	23.5MC (10MC SWP)	21.9MC 25.75	Any	Vert. amp. to Point (A). Low side to chassis.	A1, A2	Adjust for response curve similar to figure 1
2.	"	High side to Pin 1 (grid) of 6AU6, (V3). Low side to chassis.	Not used	23.6MC (Unmod.)	"	USE VTVM DC probe to Point (A) Common to chassis.	A3	Adjust for maximum deflection.
3.	"	"	"	27.25MC	"	"	A4	Adjust for MINIMUM deflection.
4.	"	"	"	25.7MC	"	"	A5	Adjust for maximum deflection.
5.	"	"	"	21.9MC	"	"	A6	"
6.	"	"	"	21.25MC	"	"	A7	Adjust for MINIMUM deflection.
7.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	23.5MC (10MC SWP)	21.9MC 25.75MC	"	Vert. amp. thru detector probe, (figure 2) to Pin 5 (plate) of 6AU6, (V3). Low side to chassis.	A8, A9, A10	Adjust for response curve similar to figure 1.
8.	"	"	"	21.25MC 21.9MC	"	Vert. amp. to Point (A) Low side to chassis.		Check for response curve similar to figure 3. If necessary retouch A1, A2, A3, A5, A6, A8, A9 and A10 for proper response.

4.5MC TRAP ADJUSTMENT

Turn the contrast control to maximum clockwise.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
9.	.001MFD	High side to Pin 5 (cathode) of 6AL5, (V7). Low side to chassis.	4.5MC (400 ∿ Mod.)	Any	DC probe thru detector, (figure 2), to Pin 11 of picture tube.	A 11	Adjust for MINIMUM deflection.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

During sound IF alignment the common lead of the VTVM is connected to approximately 160 volts with respect to chassis. Avoid touching or grounding the VTVM case.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10.	.001MFD	High side to Pin 5 (cathode) of 6AL5, (V7). Low side to chassis.	4.5MC (Unmod.)	Any	DC probe to Point (B). Common to Point (C).	A12, A13, A14	Adjust for maximum deflection.
11.	"	"	"	"	DC probe thru 1 meg to Point (D). Common to chassis.	A15	"
12.	"	"	"	"	DC probe to Point (E). Common to chassis.	A16	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	.001MFD	High side to Pin 5 (cathode) of 6AL5, (V7). Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any	Vert. amp. thru 10KΩ to Point (B). Low side to chassis.	A12, A13, A14	Adjust for maximum amplitude and symmetry as per figure 4.
11.	"	"	"	"	"	Vert. amp. to Point (E) Low side to chassis.	A16, A15	Adjust A16 so 4.5MC occurs at center of cross-over lines as per figure 5. Adjust A15 for maximum amplitude and straightness of cross-over lines.

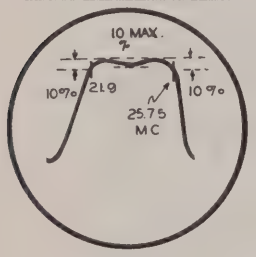


FIG.1

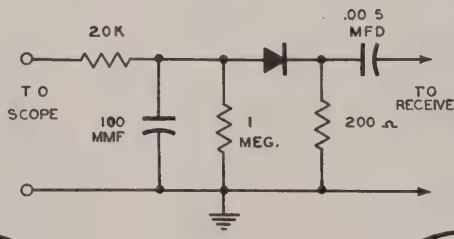


FIG.2

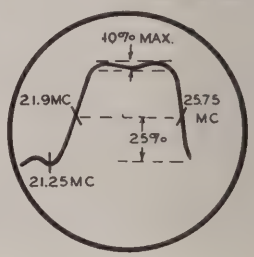


FIG.3

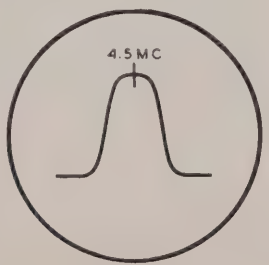


FIG.4

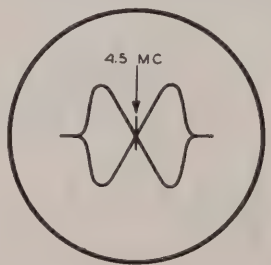


FIG. 5

ALIGNMENT INSTRUCTIONS (CONT.)

RF TUNER ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
The overall oscillator circuit adjustment, (A17), has been properly set at the factory and should not be adjusted in the field.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC SWP)	205.25MC 209.75MC	12	Vert. amp. to Point (A). Low side to chassis.	A18, A19, A20, A21	Adjust A18 to place sound marker as shown in figure 6. Adjust A19, A20 and A21 for maximum amplitude with proper bandwidth.
13.	"	"	213MC (10MC SWP)	211.25MC 215.75MC	13		A22	Adjust to place sound marker as shown in figure 6. The video marker should be at 50%.
			201MC (10MC SWP)	199.25MC 203.75MC	11		A23	
			195MC (10MC SWP)	193.25MC 197.75MC	10		A24	
			189MC (10MC SWP)	187.25MC 191.75MC	9		A25	
			183MC (10MC SWP)	181.25MC 185.75MC	8		A26	
			177MC (10MC SWP)	175.25MC 179.75MC	7		A27	
			85MC (10MC SWP)	83.25MC 87.75MC	6		A28	
			79MC (10MC SWP)	77.75MC 81.75MC	5		A29	
			69MC (10MC SWP)	67.25MC 71.75MC	4		A30	
			63MC (10MC SWP)	61.25MC 65.75MC	3		A31	
			57MC (10MC SWP)	55.25MC 59.75MC	2		A32	

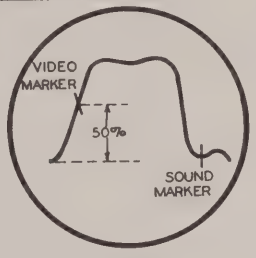


FIG. 6

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	-4VDC	0V	6.3VAC	0V	100VDC	100VDC	0V		
V 2	6J6	45VDC	90VDC	6.3VAC	0V	2.4VDC	§-4.5VDC	0V		
V 3	6AU6	-.6VDC	0V	0V	6.3VAC	105VDC	105VDC	.4VDC		
V 4	6AU6	-.6VDC	0V	0V	6.3VAC	105VDC	105VDC	.4VDC		
V 5	6AU6	0V	0V	0V	6.3VAC	140VDC	115VDC	1.4VDC		
V 6	6AU6	0V	0V	0V	6.3VAC	155VDC	115VDC	1.4VDC		
V 7	6AL5	¶160VDC	¶160VDC	0V	6.3VAC	¶160VDC	¶160VDC	¶150VDC		
V 8	6AC7	0V	¶6.3VAC	¶2VDC	¶-.2VDC	¶2VDC	¶120VDC	¶0V	¶340VDC	
V 9	6AU6	¶1.2VDC	¶6.8VDC	¶6.3VAC	¶0V	¶160VDC	¶160VDC	¶8.3VDC		
V 10	6AU6	¶4.6VDC	¶6.3VDC	¶0V	¶6.3VAC	¶160VDC	¶45VDC	¶6.2VDC	.	
V 11	6AL5	-.8VDC	-.6VDC	6.3VAC	0V	0V	0V	-2.6VDC		
V 12	6AV6	-.6VDC	0V	0V	6.3VAC	-1.4VDC	-1.3VDC	95VDC		
V 13	6V6GT	¶0V	¶6.3VAC	¶220VDC	¶230VDC	¶0V	¶0V	¶0V	¶13VDC	
V 14	12AU7	¶200VDC	¶155VDC	¶160VDC	¶6.3VAC	¶6.3VAC	¶45VDC	¶-1.2VDC	¶0V	¶0V
V 15	12AU7	¶85VDC	¶-4VDC	¶0V	¶6.3VAC	¶6.3VAC	¶110VDC	¶-8.6VDC	¶5VDC	¶0V
V 16	6SN7GT	¶-30VDC ¶-37VDC	¶245VDC	¶5VDC	¶0V	¶105VDC	¶5VDC	¶6.3VAC	¶0V	
V 17	6K6GT	¶0V	¶6.3VAC	¶390VDC	¶390VDC	¶.1VDC	¶390VDC	¶0V	¶11VDC ¶55VDC	
V 18	6SN7GT	¶-2.5VDC	¶185VDC	¶6VDC	¶-52VDC	¶115VDC	¶0V	¶0V	¶6.3VAC	
V 19	6BG6G	¶0V	¶6.3VAC	¶9.4VDC	¶-8VDC	¶-8VDC	¶-.6VDC	¶0V	¶275VDC	TOP CAP *
V 20	6W4GT	0V	0V	530VDC	0V	295VDC	0V	530VDC	530VDC	
V 21	1B3GT	* DO NOT MEASURE								TOP CAP *
V 22	5U4G	0V	220VDC	0V	¶350VAC	0V	¶350VAC	0V	220VDC	
V 23	17CP4	0V	-41VDC	PIN 10 360VDC	PIN 11 -35VDC	PIN 12 6.3VAC				

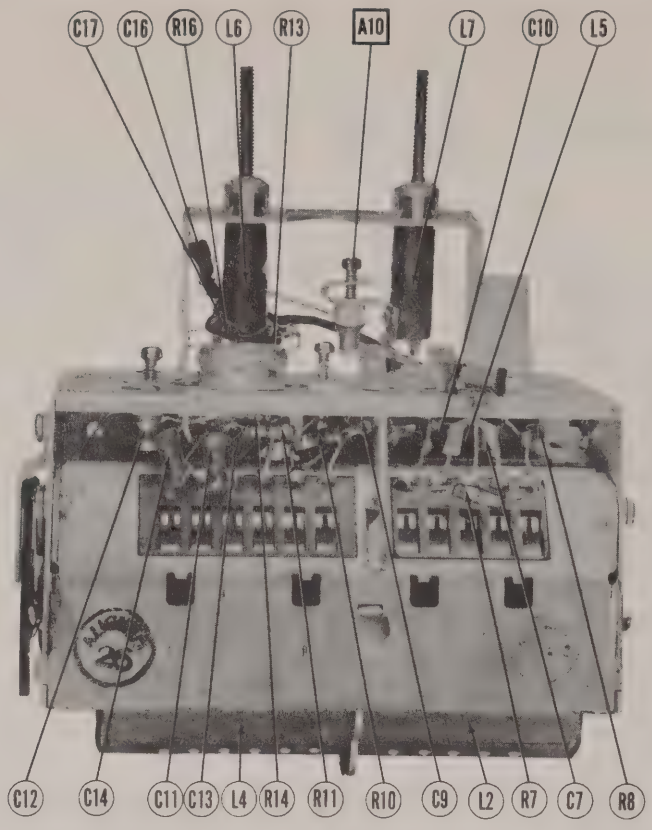
ALL MEASUREMENTS ARE WITH PICTURE TUBE REMOVED
¶ MEASURE FROM -160VDC LINE
* DO NOT MEASURE
§ TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

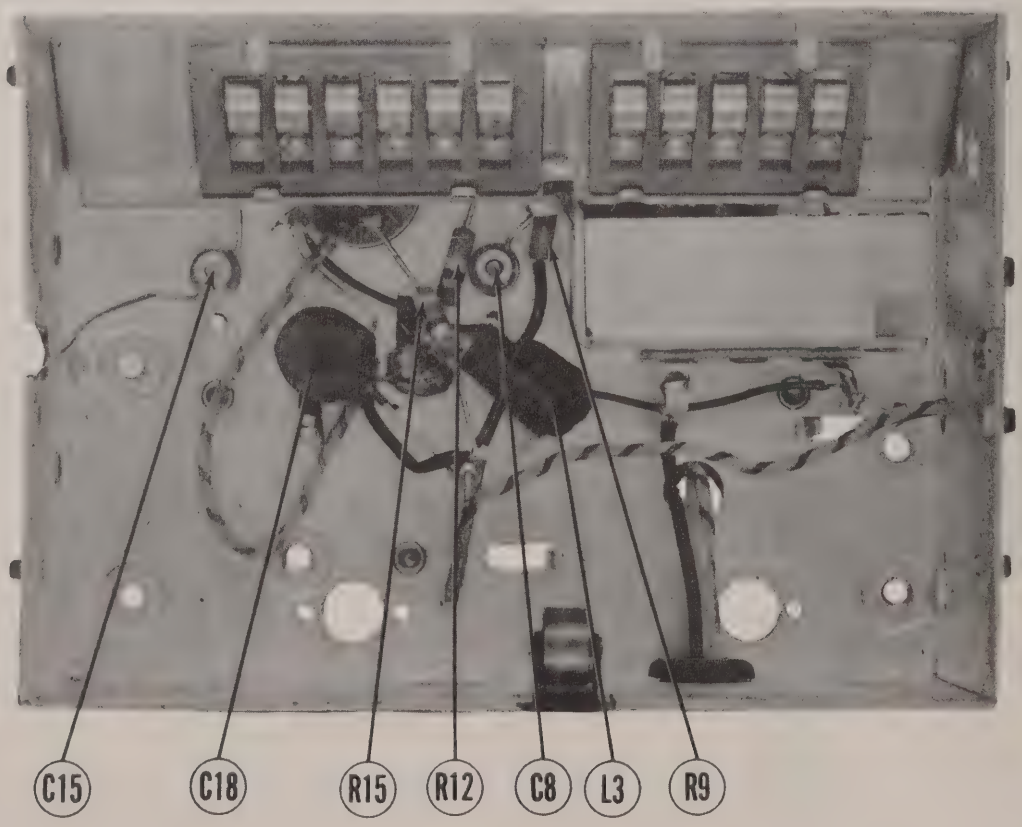
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	1.1Meg	0Ω	.1Ω	0Ω	†3.4KΩ	†3.4KΩ	0Ω		
V 2	6J6	†5.9KΩ	†11KΩ	.1Ω	0Ω	224KΩ	10KΩ	0Ω		
V 3	6AU6	1.1Meg	0Ω	0Ω	.1Ω	†2.5KΩ	†2.5KΩ	68Ω		
V 4	6AU6	1.1Meg	0Ω	0Ω	.1Ω	†2.5KΩ	†2.5KΩ	68Ω		
V 5	6AU6	2.7Ω	0Ω	0Ω	.1Ω	†4.1KΩ	†2.5KΩ	220Ω		
V 6	6AU6	.2Ω	0Ω	0Ω	.1Ω	†1.5KΩ	†2.5KΩ	220Ω		
V 7	6AL5	26KΩ	4.7KΩ	0Ω	.1Ω	1.2Ω	0Ω	100KΩ		
V 8	6AC7	0Ω	¶.1Ω	¶1.5KΩ	¶1.2Meg	¶1.5KΩ	1KΩ	¶0Ω	†6KΩ	
V 9	6AU6	¶1Meg	¶1KΩ	¶.1Ω	¶0Ω	4.3Ω	0Ω	¶1.2KΩ		
V 10	6AU6	¶48KΩ	¶1KΩ	¶0Ω	¶.1Ω	2.4Ω	¶8.5KΩ	¶1KΩ		
V 11	6AL5	200KΩ	100KΩ	.1Ω	0Ω	0Ω	0Ω	100KΩ		
V 12	6AV6	10Meg	0Ω	0Ω	.1Ω	Inf.	Inf.	†220KΩ		
V 13	6V6GT	Inf.	¶.1Ω	†3.3KΩ	†3KΩ	¶470KΩ	¶0Ω	¶0Ω	¶330Ω	
V 14	12AU7	†47KΩ	14KΩ	0Ω	¶.1Ω	¶.1Ω	¶7.8KΩ	¶2.3Meg	¶0Ω	¶0Ω
V 15	12AU7	11KΩ	¶330KΩ	¶0Ω	¶.1Ω	¶.1Ω	3.4KΩ	¶1Meg	¶1.5KΩ	¶0Ω
V 16	6SN7GT	¶1.7Meg ¶680KΩ	#2Meg	¶2.2KΩ	¶60KΩ	†150KΩ	¶2.2KΩ	¶.1Ω	¶0Ω	
V 17	6K6GT	Inf.	¶.1Ω	†1.4KΩ	†1.4KΩ	¶3.3Meg	¶220KΩ	¶0Ω	¶5.4KΩ ¶470Ω	
V 18	6SN7GT	¶1.5Meg	†90KΩ	¶410KΩ	¶480KΩ	†92KΩ	¶0Ω	¶0Ω	¶.1Ω	
V 19	6BG6G	Inf.	¶.1Ω	¶100Ω	¶680KΩ	¶680KΩ	¶200KΩ	¶0Ω	†15KΩ	TOP CAP #85Ω
V 20	6W4GT	Inf.	Inf.	380KΩ	Inf.	†145Ω	Inf.	#0Ω	#.1Ω	
V 21	1B3GT	PINS 1 THRU 8 INF. RESISTANCE								TOP CAP #540Ω
V 22	5U4G	Inf.	9KΩ	Inf.	¶22Ω	Inf.	¶22Ω	Inf.	9KΩ	
V 23	17CP4	0Ω	¶ 3KΩ ¶ 0Ω	PIN 10 #150KΩ	PIN 11 220KΩ	PIN 12 .1Ω				

ALL MEASUREMENTS ARE WITH PICTURE TUBE REMOVED
† MEASURED FROM PIN 8 OF V22
# MEASURED FROM PIN 3 OF V 20
¶ MEASURED FROM -160 VDC LINE

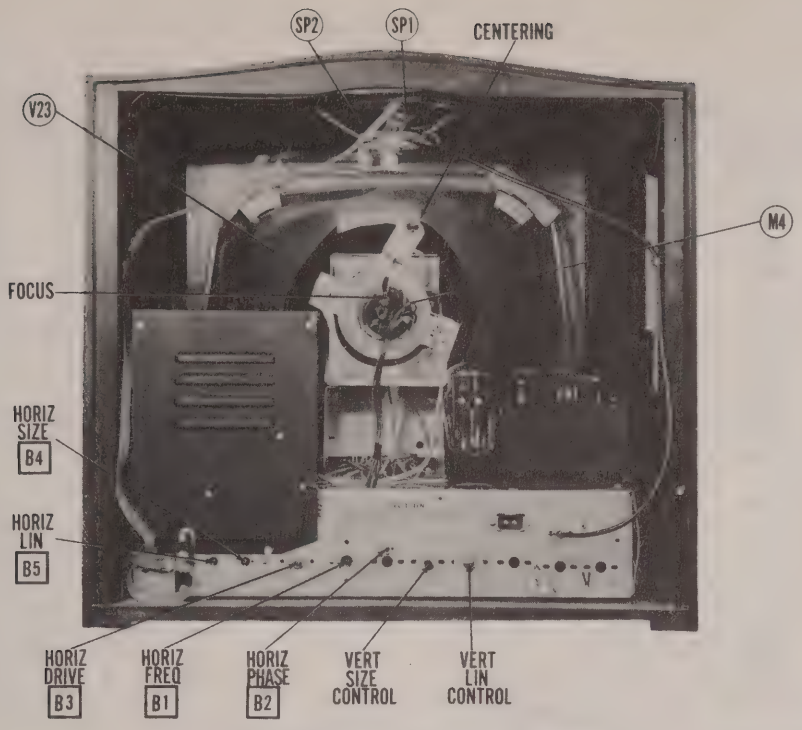
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Connect a short across C80.

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold control to maximum clockwise.

Starting with the slug all the way out, adjust B1 clockwise until the picture synchronizes.

Remove the short from C80, and connect the vertical input lead of an oscilloscope through a 22KΩ resistor, to the junction of C80 and R101.

Adjust the phasing slug, (B2), until the broad and narrow peaks of the waveform on the scope are of equal height as shown in figure 7.

If necessary during adjustment of B2, adjust B1 to keep the picture synchronized.

Turn the hold control clockwise, the picture should synchronize after approximately 1/4 revolution, and thereafter remain in synchronization over the entire range of the hold control.

Adjust the horizontal drive trimmer, (B3), clockwise as far as possible without crowding the right half of the picture.

Adjust the horizontal size slug, (B4), until the picture fills the mask horizontally.

Adjust the horizontal linearity slug, (B5), until the picture is symmetrical from left to right. Slight readjustment of B3 may be required for optimum results.

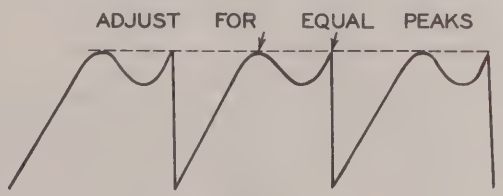


FIG. 7

DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs.
2. Remove five wood screws from rear cover. Remove rear cover.
3. Disconnect built-in antenna.
4. Disconnect speaker.
5. Remove two 5/16" hex nuts from speaker. Remove speaker.
6. Remove four 7/16" hex head bolts from chassis. Remove chassis.

NOTE: For picture tube removal, it is necessary to remove the chassis, as outlined above.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No	USE	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amplifier	800055	6CB6	7CM	
B	RF Amplifier	800052	6BC5	7BD	
C	RF Amplifier	900535	6AG5	7BD	
V2	Converter	800536	6J6	7BF	
V3	1st Video IF Amp	800533	6AU6	7BK	
V4	2nd Video IF Amp	800533	6AU6	7BK	
V5	3rd Video IF Amp	800533	6AU6	7BK	
V6	4th Video IF Amp	800533	6AU6	7BK	
V7	Video Detector - AGC Rectifier	800541	6AL5	6BT	
V8	Video Amplifier	800390	6AC7	5N	
V9	Sound IF Amplifier	800533	6AU6	7BK	
V10	Limiter	800533	6AU6	7BK	
V11	Discriminator	800541	6AL5	6BT	
V12	AF Amplifier	800057	6AV6	7BT	
V13	Audio Output	800270	6V6GT	7AC	
V14	1st Sync. Amp. -1st Sync. Separator	800028	12AU7	9A	
V15A	2nd Sync. Amp. - 2nd Sync. Separator - Phase Inverter	800028	12AU7	9A	
B	2nd Sync. Amp. - 2nd Sync. Separator - Phase Inverter	800380	6SN7GT	8BD	
V16	Vertical Multi.	800380	6SN7GT	8BD	
V17	Vertical Output		6K6GT	7S	
V18	Horiz. AFC - Horiz. Oscillator	800380	6SN7GT	8BD	
V19	Horiz. Output	800004	6BG6G	5BG	
V20	Damper	800037	6W4GT	4CG	
V21	HV Rectifier	800450	1B3GT	5C	
V22	LV Rectifier	800280	5Y4G	5T	
V23	Picture Tube	810018	17CP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: EMERSON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450	925148	AFH888J		UPT44445		TVL-3787	▲ Filter
B	40	450							■ Filter
C	40	450							▲ Audio Output Dec.
C2A	40	450	925148	[illegible]		UPT44445		TVL-3787	▲ Filter
B	40	450							■ Filter
C	40	450							▲ Filter
C3A	40	150	925149	AFH161612F		UPT825415		TVL-3525	▲ Filter
B	50	50				V5			▲ Vert. Output Cathode
C4A	20	450	925184	AFH333J		UP2H45		TVL-3778	■ Decoupling
B	10	450							▲ Decoupling
C	10	450							Filter
C5	60	250	925211	PRS450/40-40	[illegible]	[illegible]		TVA-1613	Filter †
C6	5	450	925185	PRS450/4	[illegible]	[illegible]		TVA-1702	Decoupling
C7	3-9								Variable Trimmer
C8	.5-3				[illegible]				Variable Trimmer
C9	120				TCN-120				RF Amp. Decoupling
C10	1500			SII500	D6-152		GP2L-152	29C8	RF Amp. Fil.
C11	100			SII00N750	TCN-100		N750L-101	29C16	RF Coupling
C12	.5-3				[illegible]				Variable Trimmer
C13	30			SI20N0P0	TCZ-20		NP0K-200	19C3	Osc. Grid Cap.
C14	10			SI10N750	TCN-10		N750K-100	19C4	Fixed Trimmer
C15	.5-3				829-3				Variable Trimmer
C16	10			SI10NP0	TCZ-10		NP0K-100	19C3	Fixed Trimmer
C17	1000			[illegible]	[illegible]		801-001	19C1	Conv. Plate Decoupling
C18A	1000			BPD-2X001	DD-2-102		BU2-001	29C7	RF Bypass
B	1000								Conv. Fil.
C19	1500		928006	[illegible]	D6-152	1W5D15	GP2L-152	29C8	RF Bypass
C20	1500		928006	SII500	D6-152	1W5D15	GP2L-152	29C8	AGC Filter
C21	1500		928006	SII500	D6-152	1W5D15	GP2L-152	29C8	1st. Video IF Dec.
C22	.02	400	925184	[illegible]	P488-02	DF-503	PTE4S2	4TM-S2	RF Bypass
C23	1500		928006	SIL500	D6-152	1W5D15	GP2L-152	29C8	RF Bypass
C42	75			SI75N750	TCN-75		N750L-750		Fixed Trimmer
C25	150	500	910215	1468-00015	D6-151	5W5T15	GP2K-151	1FM-315	IF Coupling
C26	200	500	910225	1468-0002	D6-201	5W5T2	GP2K-201	1FM-32	AGC Filter
C27	1500		928006	SII500	D6-152	1W5D15	GP2L-152	29C8	2nd. Video IF Dec.
C28	270	500	910214	1468-00025	D6-271	5W5T25	GP2K-271	1FM-325	IF Coupling
C29	1500		928006	SII500	D6-152	1W5D15	GP2L-152	29C8	3rd. Video IF Amp. Screen
C30	1500		928006	SII500	D6-152	1W5D15	GP2L-152	29C8	3rd. Video IF Amp. Cath.
C31	1500		928006	SII500	D6-152	1W5D15	GP2L-152	29C8	RF Bypass
C32	270	500	910214	1468-00025	D6-271	5W5T25	GP2L-271	1FM-325	IF Coupling
C33	50	500	[illegible]	[illegible]	D6-500	5R5Q5		MS-45	Fixed Trimmer
C34	1500		928006	SII500	D6-152	1W5D15	GP2L-152	29C8	4th. Video IF Screen
C35	1500		928006	SII500	D6-152	1W5D15	GP2L-152	29C8	4th. Video IF Cathode
C36	1500		928006	[illegible]	D6-152	1W5D15	GP2L-152	29C8	4th. Video IF Decoupling
C37	5		928007	SI5	TCZ-4.7	5W5V5	NP0K-050	MS-55	Video Diode Filter
C38	1500		928006	[illegible]	D6-152	1W5D15	GP2L-152	29C8	Video Det.-Fil.
C39	25		928110	SI25	D6-250	5W5Q25	GP1K-250	19C27	IF Coupling
C40	.25	200	921330	[illegible]		GT2P25		2TM-P25	AGC Filter
C41	50			[illegible]					Fixed Trimmer
C42	.047	400	922554	P488-047	DF-503	PTE4S5		4TM-S47	Video Coupling
C43	.25	400	921530	[illegible]		GT4P25		4TM-P25	RF Bypass
C44	.01	400	921514	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Bias Filter
C45	.22	400	922525	P488-22		GT4P25		4TM-P22	Video Coupling
C46	.05	400	922554	[illegible]	DF-503	PTE4S5		4TM-S5	Picture Tube Grid
C47	.01	400	922514	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Vert. Sweep Coupling
C48	5		928007	SI5	TCZ-4.7	5W5V5	NP0K-050	MS-55	Sound IF Coupling
C49	1500		928006	SII500	D6-152	1W5D15	GP2L-152	29C8	AVC Filter
C50	5000		924109	[illegible]	DD-502	1D5D5	81J-005	29C1	Sound IF Decoupling
C51	1500		928006	[illegible]	D6-152	1W5D15	GP2L-152	29C8	Sound IF Cathode
C52	68	500	910221	[illegible]	D6-680	5W5Q7	GP1K-680	19C10	Limiter Grid
C53	1500		928006	[illegible]	D6-152	1W5D15	GP2L-152	29C8	Limiter Decoupling
C54	1500		928006	[illegible]	D6-152	1W5D15	GP2L-152	29C8	Limiter Screen

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: EMERSON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C55	50	500	910222	1468-00005	D6-500	5W5Q5	GP1K-500	1FM-45	RF Bypass
C56	.001	600	921713	P488-001	D6-102	PTE6D1	GP2L-102	6TM-D1	De-emphasis
C57	.01	400	921514	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Audio Coupling
C58	.01	400	921514	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Audio Coupling
C59	.001	600	921713	P488-001	D6-102	PTE6D1	GP2L-102	6TM-D1	AF Amp. Plate
C60	.047	400	922554	P488-047	DF-503	PTE6S5		4TM-S47	Audio Coupling
C61	.0047	600	921753	P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Audio Output Plate *
C62	.047	400	922554	P488-047	DF-503	PTE6S5		4TM-S47	Sync. Coupling
C63	.110	500	910010	1469-0001	D6-131	5R5T1	GP3K-121	MS-31	Sync. Coupling
C64	.047	400	922554	P488-047	DF-503	PTE4S5		4TM-S47	Sync. Coupling †
C65	.01	400	922514	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Sync. Coupling
C66	.01	600	922514	P688-01	D6-103	PTE6B1	GP2-333-103	6TM-S1	Vert. Sync. Coupling
C67A	2200		923026 ♦	SI2300	[illegible]	♦	GP2-333-222	29C28	Integrator Net.
B	4700			SI4700	[illegible]	PC-100	GP2-333-472	29C20	Integrator Net.
C	4700			SI4700	[illegible]		GP2-333-472	29C20	Integrator Net.
C68	.0047	400	922753	P688-0047	D6-472	PTE-6D5	GP2-333-472	6TM-D47	Vert. MV Feedback
C69	.05	400	921554	P488-05	DF-503	PTE4S5		4TM-S5	Vert. MV Cathode
C70	.047	600	922654	P688-047	DF-503	PTE6S5		6TM-S47	Vert. Discharge
C71	.22	400	922525	P488-22		GT4P25		4TM-P22	Vert. Sync. Coupling
C72	.02	200	921324	P488-02	DF-203	PTE4S2		2TM-S2	Fixed Trimmer
C73	82	500	921022	1468-0001	DF-820	5W5T1	GP1K-820	1FM-31	Horiz. Sync. Coupling
C74	.047	400	922554	P488-047	DF-503	PTE4S5		4TM-S47	AFC Filter
C75	.5	200	921355	P288-5		GT2P5		2TM-P5	AFC Filter
C76	.02	200	921324	P488-02	DF-203	PTE4S2		2TM-S2	AFC Filter
C77	82	500	920022	1468-0001	DF-820	5W5T1	GP1K-820	1FM-31	Horiz. Feedback
C78	.047	400	922554	P488-047	DF-503	PTE4S5		4TM-S47	Horiz. AFC Plate
C79	180	500	921042	1469-0002	D6-181	5R5T2	GP2K-181	MS-32	Horiz. Osc. Grid
C80	.01	600	922041	P688-01	D6-103	PTE6S1		6TM-S1	Fixed Trimmer
C81	1000		910211	1468-001	D6-102	1W5D1		1FM-21	Horiz. Discharge
C82	470		910017	1468-0005	D6-471	5W5T5	GP2K-471	1FM-35	Horiz. Sweep Coupling
C83	.047	600	922754	P688-047	DF-503	PTE6S5		6TM-S47	Horiz. Output Screen
C84	.25	200	921330	P488-25		GT2P25		2TM-P25	Horiz. Output Cathode
C85	1500		928006	SII500	D6-152	1W5D15	GP2L-152	29C8	Horiz. Output Cathode
C86	18	6000	928052	[illegible]		[illegible]			Horiz. Output Plate
C87	.022	600	922824	P1088-22		PTE16S2		MB-S22	Damper Filter
C88	.018	600	922051	[illegible]		[illegible]			Damper Filter
C89	500	20000	923016	[illegible]	TV2-502	[illegible]			HV Filter
C90	1500		928006	SII500	D6-152	1W5D15	GP2L-152	29C8	RF Bypass
C91	1500		928006	SII500	D6-152	1W5D15	GP2L-152	29C8	Fil. Bypass
C92	.047	400	922101	P488-047	DF-503	PTE4S5		4TM-S47	Line Filter
C93	.047	400	922101	P488-047	DF-503	PTE4S5		4TM-S47	Line Filter
C94	.047								Sync. Coupling ††

† This capacitor is used in place of 80MFD 250V section of Mfgrs. Part # 925149 in some models.
" Some models use .005MFD in this application.
♦ Some models use .05MFD in this application.
♦ Items C67A, C67B, C67C, R78A, R78B, R78C are combined in one unit in some sets.
†† This item should be added in "fringe" areas where little interference is encountered.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1500Ω	½	390167			SBB-654-S	Contrast Control - Front
B	1Meg	½					Volume Control and SW - Rear
R2A	100KΩ	½	390162	Q11-128	AG-49-S	AN-40	Brightness Control
B	Shaft		Not Req.	Not req.	RS-2	AK-4	Attach to R2A per instructions
R3A	1Meg	½	390163	Q11-137	AG-61-S	AN-69	Vert. Hold Control
B	Shaft		Not req.	Not req.	RS-2	AK-4	Attach to R3A per instructions
R4A	50KΩ	½	390164	Q11-123	AG-44-S	AN-31	Horiz. Hold Control
B	Shaft		Not req.	Not req.	RS-2	AK-4	Attach to R4A per instructions
R5A	2Meg	½	390142	Q11-139	AG-83-S	AN-75	Vert. Size Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R5A per instructions
R6	5000Ω	½	390143	W-5000	43-5000	VK-135	Vert. Linearity Control - Wire Wound

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE SPECIFIED
R7	3900Ω	½		BTS-3900	Antenna Coil Shunt
R8	47KΩ 20%	½		BTS-47K	AGC Network
R9	2200Ω 20%	½	340332	BTS-2200	RF Amp. Decoupling
R10	10KΩ	½	340672	BTS-10K	RF Coil Shunt
R11	4700Ω	½	340212	BTS-4700	Mixer Grid
R12	220KΩ 20%	½		BTS-220K	Mixer Grid
R13	10KΩ 20%	½			Mixer Plate Decoupling
R14	10KΩ	½		BTS-10K	Osc. Grid
R15	4700	½		BTS-4700	Osc. Plate
R16	18KΩ 5%	2			Conv. Plate Coil Shunt
R17	1000Ω 20%	½	350492	BTS-1000	AGC Network
R18	1000Ω	½	350492	BTS-1000	AGC Network
R19	220Ω	½	340332	BTS-220	Decoupling
R20	5600Ω	½	340672		1st. Video IF Transformer Shunt
R21	68Ω	½	340212		1st. Video IF Amp. Cathode
R22	1000Ω	½	350492	BTS-1000	1st. Video IF Amp. Decoupling
R23	1000Ω	½	350492	BTS-1000	AGC Network
R24	10KΩ	½	340732		2nd. Video IF Transformer Shunt
R25	10KΩ	½	340732		2nd. Video IF Amp. Grid - See Note 3
R26	68Ω	½	340212		2nd. Video IF Amp. Cathode - See Note 3
R27	1000Ω 20%	½	350492	BTS-1000	2nd. Video IF Amp. Decoupling
R28	56000Ω	½	340672		RF Choke Coil Shunt
R29	220Ω	½	340332	BTS-220	3rd. Video IF Amp. Cathode
R30	1000Ω 20%	½	350492	BTS-1000	3rd. Video IF Amp. Screen
R31	27000Ω	½	340592	BTS-2700	3rd. Video IF Amp. Plate
R32	1000Ω 20%	½	350492	BTS-1000	3rd. Video IF Amp. Plate Decoupling
R33	220Ω	½	340332	BTS-220	4th. Video IF Amp. Cathode
R34	1000Ω	½	350492	BTS-1000	4th. Video IF Amp. Screen
R35	1000Ω 20%	½	350492	BTS-1000	4th. Video IF Amp. Plate Decoupling
R36	4700Ω	½	340652	BTS-4700	Video Det. Diode Load
R37	22KΩ	½	340612	BTS-22K	AGC Network
R38	100KΩ	½	340972	BTS-100K	AGC Load
R39	1Meg 20%	½	351213	BTS-1Meg	AGC Netowrk
R40	2.2Meg	½	341292	BTS-2.2Meg	Bias Network
R41	220KΩ	½	341052	BTS-220K	Bias Network
R42	1Meg 20%	½	351213	BTS-1Meg	Video Amp. Grid
R43	10Ω	2	340012	BW-½-10	Video Amp. Cathode
R44	5600Ω 5%	2	397065	BTB-5600-5%	Video Amp. Plate

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	IDENTIFICATION CODES
R45	22KΩ	½	340812	BTS-22K	Video Peaking Coil Shunt
R46	100KΩ	½	340972	BTS-100K	Vert. Retrace Blanking Network
R47	100KΩ 20%	½	340972	BTS-100K	Vert. Retrace Blanking
R48	220KΩ	½	341052	BTS-220K	Picture Tube Grid
R49	1000Ω	½	350492	BTS-1000	Bias Network
R50	1Meg	½	351212	BTS-1Meg	AVC Network
R51	220Ω	½	340332	BTS-220	Sound IF Amp. Cathode
R52	1000Ω	½	350492	BTS-1000	Bias Network
R53	47KΩ	½	350892	BTS-47K	Limiter Grid
R54	27KΩ	1	370832	BTA-27K	Limiter Screen
R55	10KΩ	½	340732	BTS-10K	Voltage Divider - See Note 3
R56	100KΩ	½	340972	BTS-100K	Disc Diode Load
R57	100KΩ	½	340972	BTS-100k	Disc. Diode Load
R58	68KΩ	½	340932	BTS-68K	De-emphasis
R59	10Meg	½	351452	BTS-10Meg	AF Amp. Grid
R60	220KΩ	½	341052	BTS-220KΩ	AF Amp. Plate
R61	470KΩ	½	351132	BTS-470KΩ	Output Grid
R62	330Ω	1	370372	BTA-330	Output Cathode
R63	2500Ω	5	394107	1 3/4A-2500	Output Decoupling - Wire Wound
R64	10KΩ	½	340732	BTS-10K	Isolation
R65	47KΩ	½	340892	BTS-47K	1st. Sync. Amp. Plate
R66	10KΩ	½	340732	BTS-10K	Isolation
R67	2.2Meg	½	341292	BTS-2.2Meg	1st. Sync. Sep Grid
R68	100KΩ	½	340972	BTS-100K	1st. Sync. Sep Grid
R69	22KΩ	½	340812	BTS-22K	1st. Sync. Sep. Plate
R70	10KΩ	½	340732	BTS-10K	Voltage Divider
R71	330KΩ	½	341092	BTS-330K	2nd. Sync. Sep. Grid
R72	10KΩ 20%	1	370732	BTA-10K	2nd. Sync. Sep. Plate
R73	1Meg	½	351212	BTS-1Meg	2nd. Sync. Amp. Grid
R74	1500Ω	½	340532	BTS-1500	2nd. Sync. Amp. Cathode
R75	2200Ω	1	340572	BTA-2200	2nd. Sync. Amp. Plate
R76	220Ω	½	340332	BTS-220	2nd. Sync. Amp. Plate - See Note 3
R77	22KΩ	½	340812	BTS-22K	Voltage Divider
R78A	22KΩ	½	923026 ♦	BTS-22K	Integrator
B	8200Ω	½		BTS-8200	Integrator
C	8200Ω	½		BTS-8200	Integrator
R79	2200Ω	1	340572	BTA-2200	Vert. MV Cathode
R80	150KΩ	1	371012	BTA-150K	Vert. MV Plate
R81	680KΩ 5%	½		BTS-680K-5%	Vert. MV Grid - See Note 1
R82	470KΩ	½	351132	BTS-470K	Vert. MV Plate
R83	12KΩ	½		BTS-12K	Vert. Peaking - See Notes 2 and 3
R84	3.3Meg	½	341332	BTS-3.3Meg	Vert. Output Grid
R85	470Ω	½	340412	BTS-470	Vert. Output Cathode
R86	470Ω	1	370412	BTA-470	Decoupling
R87	470Ω	1	370412	BTA-470	Decoupling
R88	220KΩ	½	341052	BTS-220K	Damping
R89	220KΩ	½	341052	BTS-220K	Voltage Divider
R90	150KΩ	½	341012	BTS-150K	Voltage Divider
R91	330KΩ	½	341092	BTS-220K	Horiz. AFC Grid
R92	820KΩ	½	341192	BTS-820K	Horiz. AFC Grid
R93	82KΩ 5%	1	360952	BTA-82K-5%	Horiz. AFC Cathode
R94	330KΩ 5%	1	361092	BTA-330K-5%	Horiz. AFC Cathode
R95	100KΩ	½	370972	BTA-100K	Horiz. AFC Plate
R96	3900Ω	½	340632	BTS-3900	Horiz. AFC Filter
R97	120KΩ	1	370992	BTA-120K	Voltage Divider
R98	150KΩ	½	341012	BTS-150K	Horiz. Feedback
R99	150KΩ 5%	½	341012	BTS-150K-5%	Horiz. Osc. Grid
R100	82KΩ	1	370952	BTA-82K	Horiz. Osc. Plate
R101	8200Ω	½	340732	BTS-8200	Horiz. Osc. Coil Shunt
R102	10KΩ	½	340732	BTS-10K	Decoupling
R103	68Ω	½	340212		Parasitic Suppressor
R104	1Meg 20%	½	351212	BTS-1Meg	Horiz. Output Grid
R105	100Ω	2	397027	BW-2-100	Horiz. Output Cathode
R106	10KΩ	5	394104	1 3/4A-10K	Horiz. Output Screen - Wire wound - See Note 3
R107	750Ω	10	394108	1 3/4A-750	Horiz. Size Coil Shunt - Wire Wound
R108	1Meg 20%	1	391212		HV Filter
R109	1000Ω	5	394109	1 3/4A-1000	Voltage Divider - Wire Wound
R110	4000Ω	5	394106	1 3/4A-4000	Filter - Wire Wound
R111	330Ω	10	394121	1 3/4A-350	Filter - Wire Wound
R112	1000Ω	15	394105	2D-1000	Voltage Divider - Wire Wound
R113	8000Ω	10	394060-6	1 3/4A-8000	Bleeder - Wire Wound
R114	100KΩ 20%	1	370972	BTA-100K	Isolation

♦ Items R78A, R78B, R78C, C67A, C67B, and C67C are combined into one unit in some sets.
Note 1 Some models use 470KΩ resistor in this application.
Note 2 Some models use 10KΩ resistor in this application.
Note 3 Some models use series resistors in this application to obtain desired value.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1	117VAC	780VCT	5VAC	6.3VAC ③ 1.2A	730028 or 730027 and 730028 ⑥			TP-392 and F633 ③ and ④
	③1.85A	.210ADC	③ 3A	SEC. 4 6.3VAC ③ 3A				
				SEC. 5 6.3VAC ③ 5A				

③ Used for SEC. #4
④ Mount separately above or below chassis where space permits
⑥ Filament transformer used in some models

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: EMERSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	52Ω		738047 or 738048				Horizontal Output Trans.
	Tap 85Ω						
T3	440Ω	.4Ω	738044		A-3039		Vertical Output Trans.
T4A	43Ω		708117		MDF-30		Horiz. Deflection Coil
B	5.3Ω						Vertical Deflection Coil

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		EMERSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T5	5.2KΩ	4Ω	330Ω	.7Ω	734051	A-3849	A-3019	R0-9 ⑤	⑤ Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	EMERSON PART No.	VIKING PART No.	QUAM PART No.	
SP1A	PM	4Ω	180050 ①	12J12	12A31	① Used in console models
B	PM	4Ω	180041 ②	6J4	6A15	② Used in table models
	CONE DIA.	V. C. DIA.				
SP2A	11 7/8	1"				
B	5 7/8	9/16"				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	EMERSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.200A	110Ω	4.8 Henries	737011	C-1410 ⑤	C-2991 ⑤	TR4200⑤	⑤ Drill one new mounting hole.

COILS (RF-IF)

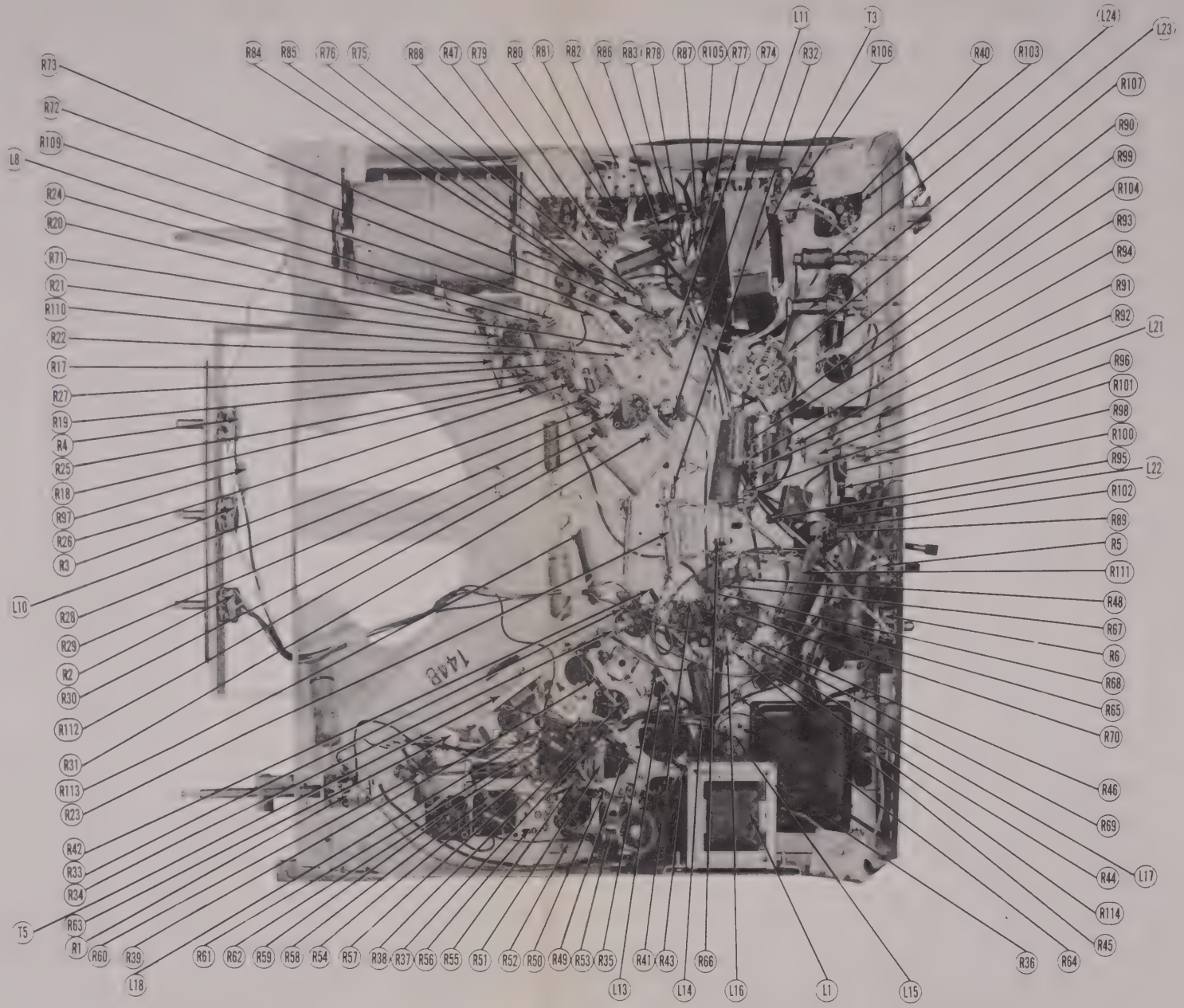
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	EMERSON PART No.	MEISSNER PART No.	
L2	Ant. Coil	0Ω	0Ω			
L3	Fil. Choke	0Ω	0Ω			
L4	RF, Mixer & Osc. Coils	0Ω	0Ω			
L5	Fil. Choke	0Ω	0Ω			
L6	1st. Video IF Primary	.2Ω				
L7	1st Video IF Sec.	.2Ω				
L8	2nd. Video IF	.2Ω	0Ω	720105		
L9	3rd. Video IF	.2Ω		720088		
L10	RF Choke	2.7Ω		705014		
L11	4th. Video IF	.2Ω	0Ω	720091		
L12	5th. Video IF	1.2Ω	1.2Ω	720089		
L13	4.5MC Trap	1.9Ω		708032		
L14A	Peaking	2.7Ω		705014		20 Microhenries
B	Peaking			708094	19-1921	125 Microhenries (Used in later production)
L15A	Peaking	17Ω		708116		1000 Microhenries (Blue Dot)
B	Peaking			708099	19-1923	330 Microhenreis (Used in later production)
L16A	Peaking	14Ω		708099	19-1923	330 Microhenries (White Dot)
B	Peaking			708095	19-1921	180 Microhenries (Used in later Production)
L17A	Peaking	20Ω		708115		660 Microhenries (Yellow Dot)
B	Peaking			708099	19-1923	330 Microhenries (Used in later production)
L18	Sound Take-off Coil	4.3Ω		708093		35 Microhenries (Red Dot)
L19	1st. Sound IF	2.3Ω	2.3Ω	720081		
L20	Disc. Trans.	2.4Ω	2.5Ω	708017		Tap 1.2Ω
L21	Horiz. Osc.	120Ω	Tap35Ω	738035		
L22	Wave Forming Coil	58Ω		708037		
L23	Horiz. Size	4.3Ω		708058		
L24	Horiz. Line.	35Ω		708003		

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			EMERSON PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3A G Pigtail	.250	808170		318.250		

MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
M2	RF Tuner	470651	
M3	Focus Magnet	708072	
M4	Ion Trap	708065	
B3	Trimmer	900054	(25-300 Microhenries) Horiz. Drive
A12	Trimmer	900064	(3-35 Microhenries) Sound Take-off Trimmer
	Knob	460233	Contrast (Models -676D, 681D, 686B and 687B)
	Knob	450106	Off/On Volume (Models-676D, 681D, 686B and 687B)
	Knob	450105	Selector (Models 676D, 681D, 686B and 687B)
	Spring	587011	Insert for 450105 and 450106
	Knob	460234	Fine Tuning (Models -676D, 681D, 686B and 687B)
	Spring	542279	Compression (Models-676D, 681D, 686B and 687B)
	Spring	542278	Compression (Models-686D, 681D, 686B and 687B)



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

MILWAUKEE-ERWOOD
MODEL 12300

FIGURE 1.

GENERAL INFORMATION

The Milwaukee Model 12300 Automatic Record Changer is a spindle-drop type, three-speed mechanism, featuring velocity trip and automatic shutoff.

It is designed to play automatically a series of twelve 10 in. or ten 12 in. records at the speeds of 33-1/3 RPM and 78 RPM. (Do not intermix types of records.)

A stack of twelve 7 in., 33-1/3 RPM records, or a stack of twelve 7 in. 45 RPM records (with the adapter inserted in the record), will also play on this changer.

Connect this changer to an outlet supplying 117 volts, 60 cycles AC, unless otherwise specified.

Manufactured By:

MILWAUKEE STAMPING COMPANY
Milwaukee 14, Wisconsin

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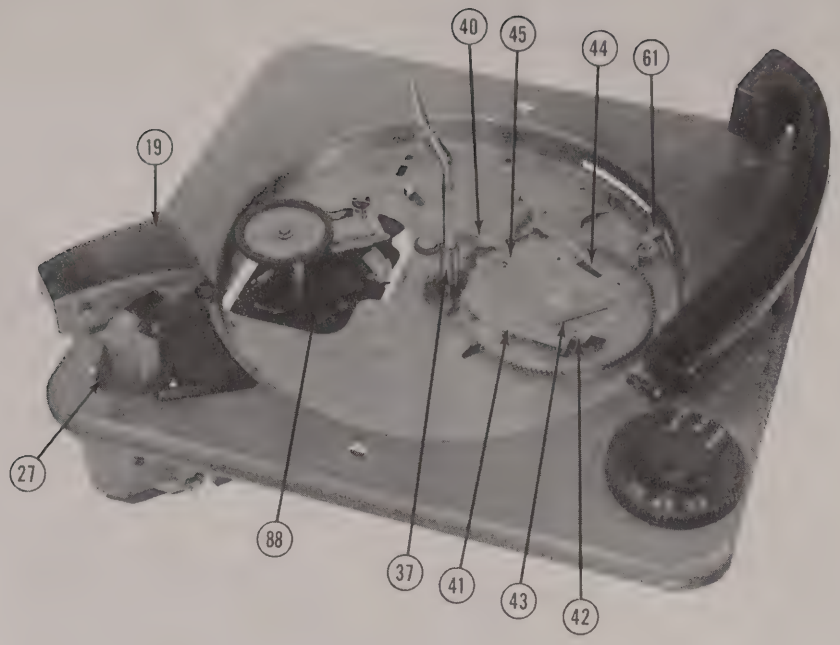

FIGURE 2.

OPERATING INSTRUCTIONS

Automatic Operation:

1 - Raise or lower the automatic shutoff and record support assembly (27) to the 12 in., 10 in., or 7 in. position (indicated on edge of record shelf (33), depending on the size of record to be played.

2 - Raise the record balance arm (19) to its vertical position.

3 - Place the stack of records to be played over the spindle, allowing them to come to a rest on the spindle step and the record shelf(33).

4 - Lower the balance arm (19) to the records.

5 - Turn the speed selector knob (54) to the proper speed.

6 - Select the proper stylus by turning the stylus selector knob (5) to the proper setting.

NOTE: The motor speed control knob (54) and the stylus selector knob (5) must show the same indication when selecting a certain type record.

7 - Turn the "Off-On-Reject" knob (53) clockwise to "Rej.", and release.

The changer will now play the entire stack of records automatically, returning the tone arm to its rest position and shutting off upon completion of the last record.

Rejecting:

To reject a record at any time while the changer is operating, turn the "Off-On-Rej." knob to "Rej.", and release.

Stopping:

To turn off changer before automatic shutoff, turn the "Off-On-Rej." knob (53) to "Off" Lift the tone arm from the record and place on the rest.

Unloading:

Raise the balance arm (19) to a vertical position. Lift stack of records straight up and off spindle.

Suggestions:

When loading and unloading the changer, use care to prevent damaging of the spindle. Records should not be left on the spindle, except during operation of changer, as this will cause warping. Do not use cracked or badly chipped records, as they may damage the stylus. When the changer is not to be operated for a period of time, it is suggested that the speed control knob (54) be turned to a position halfway between speed settings. By doing this, the idler wheel is retracted from the motor shaft and the turntable rim, thus preventing the formation of flat spots on the rubber tire of the idler wheel. For best reproduction, keep needle and records clean. Store records flat, in folders or in albums. Do not lay record on record.

FUNCTIONS OF PRINCIPAL LEVERS

Ejector Pin Assembly (92):

The following items make up the ejector pin assembly: 89, 90, 91 and 92. Spring (93) holds the roller (90) in contact with the cam (79). As the cam rotates during the change cycle, the roller rides up the incline of the cam, thereby causing the guide (92) to actuate the ejector (37A) of the spindle; this, in turn, selects and drops the bottom record to the turntable.

Lower Clamp Assembly (63):

The lower clamp assembly consists of items 55,56,60,61,62,63 and riveted parts as listed in parts list:

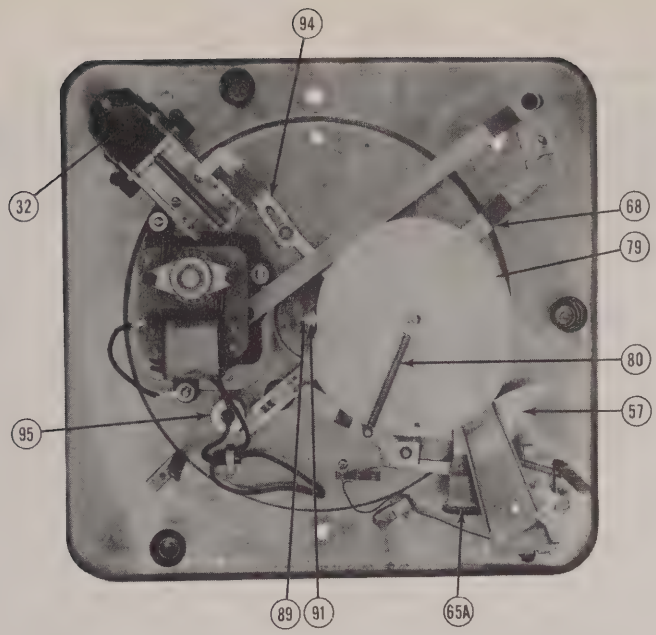

FIGURE 3.

(a) The lower clamp assembly is mechanically linked to the tone arm; therefore, any movement of the tone arm is transferred to the clamp assembly. As the tone arm moves across the record, the trip arm (61) engages and carries the trip lever (40) with it; however, a boss on the turntable pinion strikes the roller of the trip lever (40) forcing it away from the tripping point. This, in turn, causes the trip arm (61) to slip a due amount on the clamp. This slight, backward movement continues as long as the tone arm moves at a constant speed. When the tone arm enters the first lead-in groove of the record, the inward movement of the trip lever (40) is accelerated by the trip arm (61), causing the trip (40) to be pivoted inward enough for the gravity pawl (44) to drop off the trip finger (40A). The boss on the turntable pinion will now definitely engage the trip lever roller, forcing finger (40A) against the pawl (44) and starting the change cycle.

(b) Items (55 and 56) determine the tension applied to the velocity trip arm (61).

(c) The clutch plate (63A) of the clamp assembly causes the lateral movement of the tone arm when engaged by the friction springs of the clutch arm assembly (65).

(d) The index arm (63B) of the clamp assembly stops the inward movement of the tone arm when it engages one of the four steps on the index lever (57).

Clutch Arm Assembly (65):

The clutch arm assembly, when actuated by the cam (79), engages the clutch plate (63A) of clamp assembly (63), determining the lateral movement of the tone arm.

Tone Arm Riser Assembly (66):

The tone arm riser assembly's function is the vertical movement of the tone arm.

The tone arm riser lever (66) is held in contact with the cam (79) by riser lever spring (67). As the cam rotates, the riser lever is actuated which causes the plunger pin (46) to ride up the incline of the riser lever (66), thus raising the tone arm. As the cam continues to rotate, the riser lever is reversed in movement, thereby lowering the tone arm. The tab at end of riser lever (66) engages swing post (48) for a short period after stylus sets down on record and releases at end of cycle. This action provides an additional amount of lateral friction at time of set down to prevent "skating" of tone arm, and yet allow tracking if stylus picks up a fast lead in groove.

Selector Assembly and Automatic Shutoff (68):

The selector and automatic shutoff assembly consists of the following parts: Selector lever (68), shutoff trigger (74), and reject spring (75). The selector and automatic shutoff assembly is connected to the "On-Off-Rej." knob (53) at one end, and slides on a shoulder rivet (which is staked to the base plate) at the other end:

(a) When the "On-Off-Rej." knob is turned to the "On or Off" position, the power switch is actuated. When the control is turned to "Rej.", the reject spring (75) is brought in contact with a finger of the trip lever (40), tripping the mechanism.

(b) When the automatic shutoff operation takes place during the last change cycle, the end of the index lever (57A) is pivoted behind the shutoff trigger (74). At the end of the change cycle, the edge of the cam (79) moves against the pin of the index lever, pivoting it outward. This action causes the index lever to push the shutoff trigger and selector lever forward, which, in turn, shuts off the power switch.

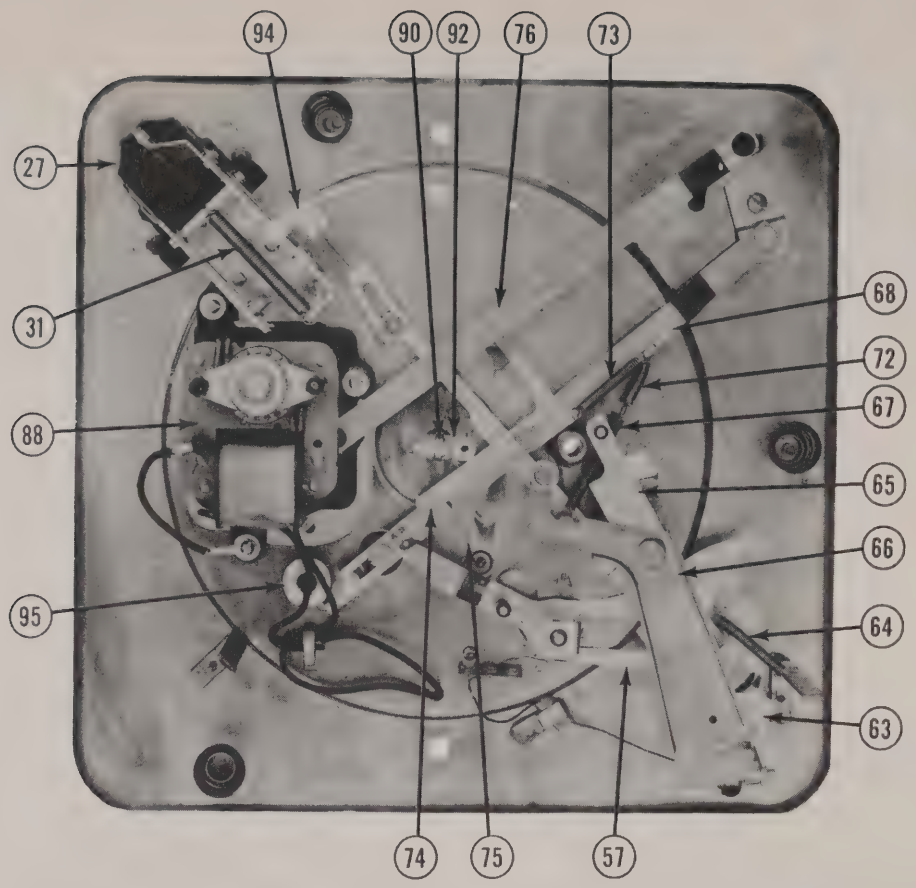

FIGURE 4.

Automatic Shutoff and Record Support Assembly (27):

This assembly consists of all the parts that are shown in Figure 5:

(a) When the balance arm (19) is raised to its vertical position or at rest on a stack of records on the record shelf (33), the shutoff lever (32) will be pivoted to a position which will permit the index selector (94) to engage it during the change cycle. By shifting the record support channel (27) to its various positions on the pivot channel (30), the position of the shutoff lever (32) is also changed. This determines the extent to which the index selector (94) moves before it contacts the lower shutoff lever (32), and fixes the set-down point of the tone arm.

(b) When the last record is dropped to the turntable, the balance arm (which is actuated by spring (23) is pulled down; however, its full travel is blocked by the engagement of the lower shutoff lever (32) and index selector (94). This engagement is released, however, at the end of the change cycle, thereby allowing the balance arm (19) to drop to its lowest position. This, in turn, actuates the connecting levers (34,26 and 32), raising the end of the shutoff lever (32) so that it will clear the index selector (94) when the change cycle is put into operation upon completion of the last record. This allows the index selector (94) to slide to its maximum position.

Index Lever Assembly:

This assembly consists of the index lever (57) and the index selector (94). This assembly, working in conjunction with the automatic shutoff and record support assembly (27), positions the tone arm for set-down and the linkage for the automatic shutoff:

(a) During normal playing of a record, the index pin and sleeve (59) is held against the ellipsoid of the cam (79) by the index spring (80). As the change cycle is put into operation, and as the cam (79) rotates, the index pin rides off cam ellipsoid; however, the index spring (80) pivots the index lever (57) inward until it is stopped by the engagement of the index selector (94) and the lower shutoff lever (32), as described in paragraph (a) of the "Automatic Shutoff and Record Support Assembly." As the tone arm moves inward, the index arm (63B) of the clamp assembly (63) will engage one of the steps on the index lever (57), depending, of course, upon the setting of the record support (33). This positions the tone arm for set-down.

(b) Upon completing the last record, the mechanism is tripped, starting the change cycle. Due to the position of the balance arm (19), the lower shutoff lever (32) is

AUTOMATIC SHUT - OFF
AND RECORD SUPPORT ASSEMBLY

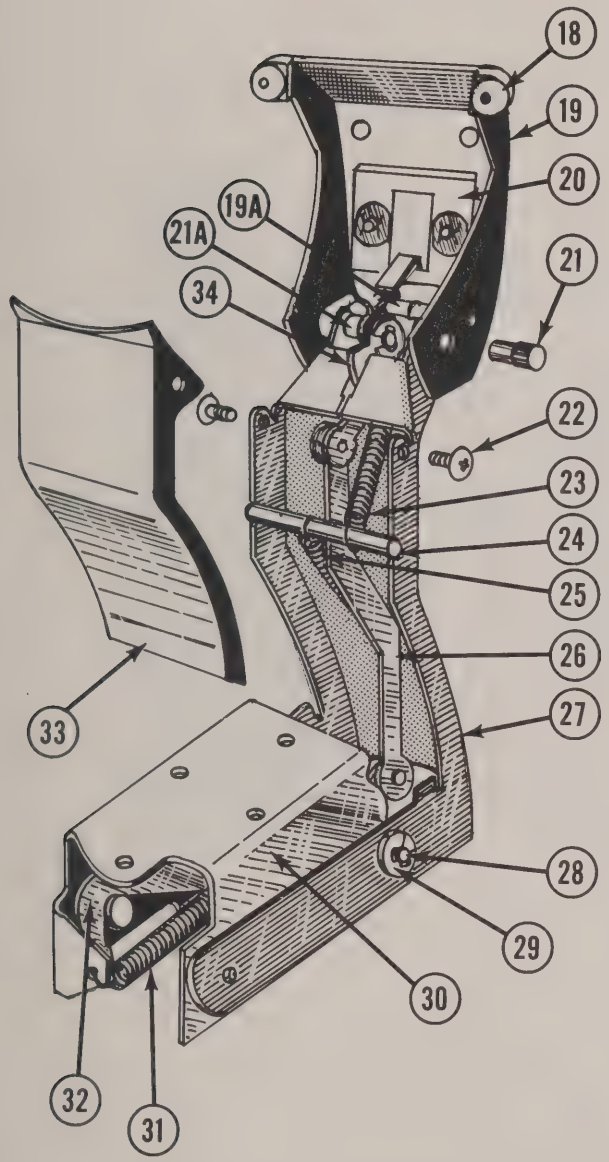

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FIGURE 5.

in a raised position, as described in paragraph (b) of "Automatic Shutoff and Record Support Assembly." This allows the index selector (94) and lever (57) to travel to their maximum positions. By this action, step (57A) of the index lever (57) moves behind the shutoff trigger (74) and step (57B) presents its edge to the index arm (63B), blocking the inward movement of the tone arm. With continued rotation of the cam, the tone arm is lowered to the arm rest, and the selector and shutoff lever assembly (68) is actuated by the index lever (57), which, in turn, actuates the power switch; this completes the shutoff operation.

Plunger Pin (46):

The plunger pin (46) is the link between the tone arm riser lever (66), which operates the vertical movement of the tone arm.

Gear Assembly (45):

The gear assembly has the final stage of the trip mechanism mounted on its surface. When this trip assembly is actuated by the trip lever (40), the gear is brought into engagement with the turntable pinion, which drives the mechanism through the change cycle.

Cycling Cam (79):

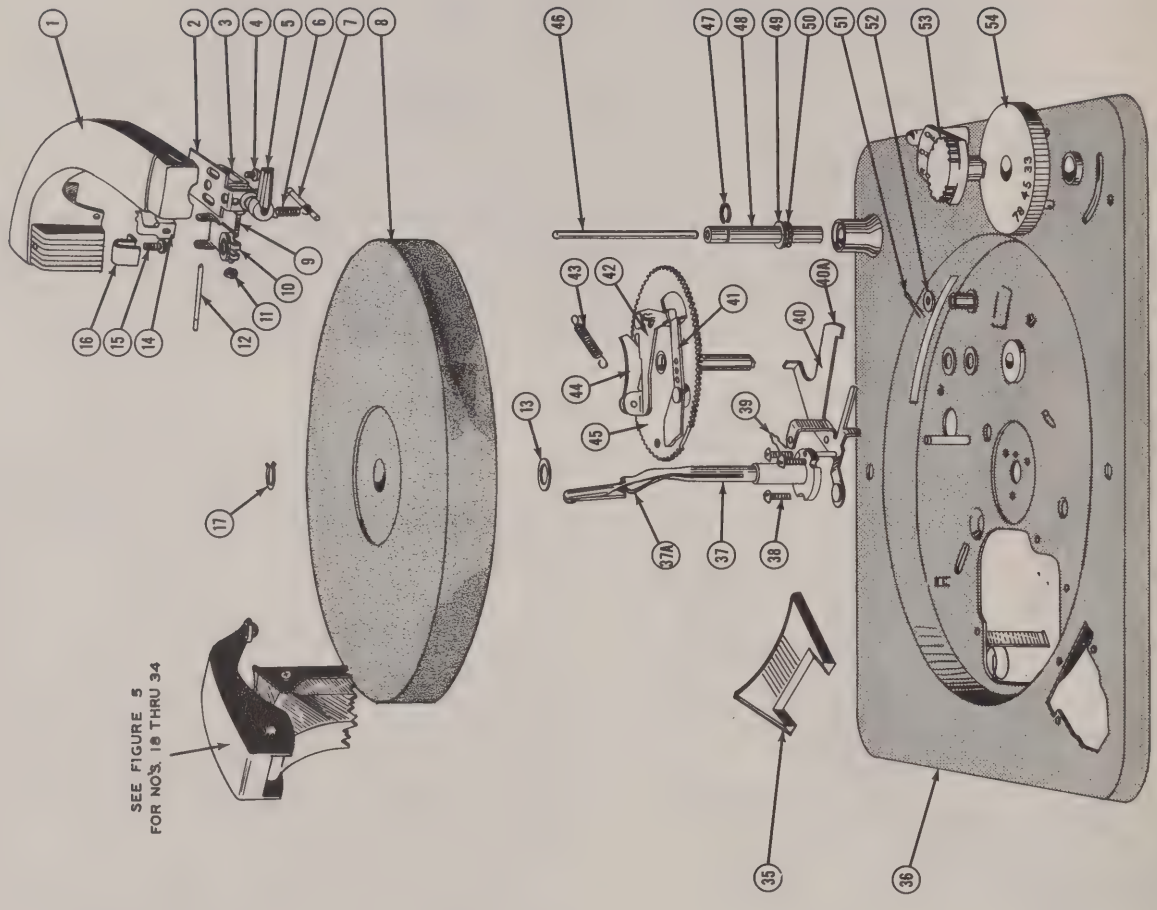
The cycling cam (79), when rotated by the gear assembly (45), actuates the following levers: The Index Lever Assembly (57), clutch arm assembly (65), tone arm riser assembly (66), and the ejector pin assembly (92).

CHANGE CYCLE

This changer is provided with what is known as a velocity trip mechanism. The change cycle is started by the faster inward motion of the pickup arm when the stylus enters the trip grooves at the end of the record. Only records having fast-finishing grooves before the eccentric cycling groove will operate this velocity trip.

The tone arm (1), upper clamp (10), and the lower clamp (63) are secured at opposite ends of the swing post (48) so that they move in unison. As the pickup arm nears the end of the record, the trip arm (61) engages the trip lever (40) moving it toward the turntable pinion. While a record is playing, the small motions of the trip lever (40) are not sufficient to trip the mechanism, because on each revolution of the turntable the wiping contact, by the projection on the turntable pinion, moves the trip lever (40) and trip arm (61) back to clear the projection.

In the first revolution of the turntable, during which the pickup arm advances rapidly, the trip lever (40) is moved far enough for the gravity pawl (44) to drop off the finger (40A) of the trip roller lever; at the same time, the roller of the trip lever is definitely engaged by the projection on the turntable pinion. The trip lever is then pushed against the pawl (44), which releases the trip pawl (41). The pawl (41) then engages the turntable pinion causing the gear (45) to


SEE FIGURE 5
FOR NO'S. 18 THRU 34
78 45 33

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rotate and to mesh with the turntable pinion, thus driving the mechanism through the change cycle.

The cycling cam (79) revolves with the gear assembly as it is secured to the gear wheel fulcrum. As the cycling cam (79) revolves, the riser lever (66) is actuated as its roller follows the contour of the top cam. This raises the tone arm from the record through the medium of the plunger pin (46).

The clutch pin sleeve (65A), riding in the cam groove, pivots the clutch arm (65) clockwise, and, in turn, swings the pickup arm out to clear the records.

The sleeve (59) of the index lever (57) now rides off the ellipsoid of the cam (79). The spring tension applied on the index lever causes the index selector (94) to move forward to engage the lower shutoff lever (32), which determines the set-down point of the tone arm.

At approximately the same time, the roller (90) of the ejector pin assembly rides up the incline portion of the cam, causing the record pusher (37A) to be actuated, thereby selecting the bottom record of a stack on the spindle and dropping it to the turntable.

As the cam continues to rotate, the tone arm is moved inward by the clutch arm (65) until the index arm (63) engages one of the steps on the index lever (57). This positions the tone arm for set-down. At the same time, the record pusher (37A) returns to its normal position as the roller (90) of the ejector pin assembly rides down on its cam track surface.

The tone arm is now lowered to the starting groove of the record by the tone arm riser lever (66). The index lever sleeve (59) now engages the ellipsoid of the cam, which pivots the index lever (57) from in front of the index arm (63) to permit the tone arm to track across the record. The index lever, at the same time, slides the index selector (94) back from its engagement with the lower shutoff lever (32).

The turntable pinion now moves into the open section on the gear (45), and the riser lever roller (66) engages the indexing groove of the cam which holds the cam (79) and gear assembly (45) in a neutral position. This completes the change cycle.

Automatic Shutoff:

When the last record on the record shelf is dropped to the turntable, the balance arm (19) is pulled down by spring (23). This causes the ear on the pin bracket (20) to engage the shutoff dog (34) of the shutoff lever sub-assembly (26); however, due to the engagement of the lower shutoff lever (32) and the index selector (94), this downward movement of the balance arm is blocked to a certain degree. As the stylus lands on the record and the change cycle is completed, the lower shut-off lever (32) is released by the index selector (94), allowing the balance arm to drop to its maximum position. This pivots the lower shutoff lever (32) up to clear the index selector. When the last record is finished playing, the change cycle is put into operation. The index lever (57) and selector (94), which have been blocked previously by the setting of the lower shutoff lever (32), are now free to move to their maximum position. By this action, finger (57A) of the index lever (57) slides behind the shutoff trigger (74). The index arm (63) moves against the end step on the index finger blocking the inward movement of the tone arm. The tone arm is now lowered to the arm rest. The index selector (57) is actuated by the cam, which, in turn, moves the selector assembly (68) forward to actuate the switch (95). This completes the shutoff cycle.

ADJUSTMENTS

Tone Arm Height:

The tone arm should be adjusted so that the stylus will clear a full stack of records on the turntable and, at the same time, not strike a record resting on the spindle and record shelf.

To adjust the tone arm height, raise the tone arm to a vertical position and turn the height adjustment screw (15) in to lower the tone arm, and out to raise it. Check the adjustment by placing eleven 10 in. records on the turntable and two 10 in. records on the spindle and record shelf. Then allow the changer to go through a complete change cycle. Repeat the above operation, if necessary, until the proper height is obtained.

Tone Arm Set-Down:

If the set-down point of the stylus is not correct, make the following adjustments:

1 - Place a 10 in. record on the turntable.

NOTE: Be sure the balance arm is raised to its vertical position, as the tone arm will set down on the arm rest, instead of moving in over the record, if the balance arm is in a lowered position.

2 - Move the tone arm in toward the spindle to trip the mechanism; then return the arm to the arm rest.

3 - Rotate the turntable clockwise, by hand, until the arm drops about half-way to the record.

4 - Raise the tone arm and loosen the clamp screw (9).

5 - Hold the index arm (63) against the index lever (57); lower the tone arm and move it to about 1/8 in. from the edge of the record.

6 - Being careful not to disturb this setting, raise the tone arm and tighten the screw.

7 - Check the adjustment by playing a stack of records and observing the set-down point of the tone arm. Repeat the above adjustment, if necessary, to obtain proper landing. This should also be correct for 7 in. and 12 in. set-down.

Spindle Record Drop Adjustment:

If records do not drop to the turntable properly during the change cycle, make the following spindle adjustments:

1 - Move the tone arm in toward the spindle to trip the mechanism; then return the arm to the arm rest.

2 - Rotate the turntable clockwise until the

ejector pin assembly (92) is raised to its maximum height.

3 - Insert a small screwdriver into the slot on the end of the adjusting stud (89); then loosen the hex lock nut (91).

4 - Turn the adjusting stud (89) until the record pusher (37A) extends at least .005 in. beyond the spindle step.

5 - While holding the stud (89) in this position, tighten the lock nut.

Velocity Trip:

Should it become necessary to adjust the velocity trip arm (61), turn the tapped washer (55) to increase or decrease the tension on the arm.

CAUTION: Too much tension on the trip arm (61) will cause premature tripping, while too little tension on the arm will prevent it from tripping the mechanism.

Tone Arm Positioning:

The index selector (94), together with its engagement with the lower shutoff lever (32), determines the position to which the index lever (57) is to be set. This, in turn, positions the tone arm for 7 in., 10 in., and 12 in. position.

The index selector (94) has been properly formed at time of manufacture and should need no adjustment under ordinary conditions. However, should this lever become bent by rough handling, the set-down point will be off; that is, the tone arm will set down on the next size record instead of the record to which the record shelf has been set. To correct this condition, bend the selector very slightly and check each adjustment to see if the index arm (63) is engaging the proper step. Continue this adjustment until the proper positioning is obtained.

NOTE: The portion of the index selector which slides on the shoulder rivet must be perfectly straight, inasmuch as a bend, or burr, will hinder this lever from operating properly.

TROUBLES

Records Fail to Drop to Turntable:

1 - Ejector pin assembly out of adjustment:

(a) See "Spindle Record Drop Adjustment."

Tone Arm Fails to Clear Stack of Records on Turntable:

1 - Height adjustment screw not properly set:

(a) See "Tone Arm Height."

Stylus Does Not Track Across Record Properly:

1 - Tone Arm Cartridge lead wire too tight:

(a) Make sure there is enough slack in the cartridge lead wire so that the tone arm will have free movement.

2 - Stylus may be clogged by accumulation of lint, dirt, etc., or worn:

(a) Remove foreign material from stylus.

(b) Check stylus to see if the tip is bent or broken. Replace, if necessary.

3 - Binding between lower clamp assembly (63) and the pickup arm stationary post of the baseplate:

(a) There should be .005 in. to .010 in. clearance between the clamp assembly (63) and the stationary post on the baseplate.

Tone Arm Fails to Index Properly:

1 - Index selector (94) bent:

(a) See "Tone Arm Positioning."

2 - Burrs or bent section on shoulder rivet on which the index selector slides:

(a) Polish off burrs; also see note under "Tone Arm Positioning."

3 - Index arm spring (80) loose or missing:

(a) If this spring is not connected, the index lever (57) will not be actuated.

Tone Arm Stays in Raised Position:

1 - Riser lever spring (67) loose or missing:

(a) If the riser lever spring is not connected, the riser lever (66) will be pivoted outward, raising the tone arm; however, the lack of spring tension on this arm will leave it in an outward position, thereby preventing the tone arm from lowering.

Manual Reject Fails to Operate:

1 - Reject spring (75) broken, missing, or loose:

(a) Replace.

2 - Trip pawl spring (43) loose:

(a) Replace.

Changer Trips Before Reaching End of Record:

1 - Hole in record too large:

(a) If the hole in the record is too large, the groove may turn eccentric with the spindle and cause premature tripping.

2 - Velocity trip arm (61) not adjusted properly:

(a) See "Velocity Trip Adjustment."

"Wow" or Speed Variations:

1 - Grease, oil, or foreign material on the idler wheel motor shaft and turntable rim:

(a) Clean these parts with carbon tetrachloride.

2 - Turntable binding:

(a) Remove turntable. Clean turntable bearing and spindle shaft with carbon tetrachloride, and apply a small amount of lubriplate to the spindle bearing.

Changer Does Not Shut Off
After Playing Last Record:

1 - Index selector (94) binding on shoulder rivet.

2 - Selector lever escapement spring (73) loose or missing:

(a) Replace.

LUBRICATION

This changer has been lubricated at time of manufacture, which should last for a long period of time; however, in cases of unusual use or high-operating temperature, or where it is subjected to dust, lint, etc., the mechanism should be thoroughly cleaned with carbon tetrachloride and lubricated as follows: Apply a small quantity of light machine oil to:

1 - Plunger pin (46), ball bearings (50), and swing post (48).

2 - Eccentric stud (89), bearing and roller (90).

3 - Ejector Guide (92).

4 - Idler wheel bearing.

Apply a small amount of lubriplate to:

1 - All the cam surfaces on cycling cam (79).

2 - The incline of the riser lever (66) and all other levers where there is frictional wear, except the velocity trip lever (61) and the friction springs of the clutch arm assembly.

CAUTION: Do not overlubricate the changer as overlubrication may cause parts to gum up, preventing the changer from operating smoothly. Do not allow oil or grease to come in contact with the idler wheel tire, motor shaft, or turntable rim. If oil or grease comes in contact with these parts, clean them with carbon tetrachloride.

MILWAUKEE 12300

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
1	12411	Tone Arm
	*12410	Tone Arm Assembly - Consists of:
		12411 Tone Arm (Item 1)
		12414 Pivot Yoke (Item 10)
		12416 Adjustment Lock (Item 16)
		12417 Adjustment Screw (Item 15)
		12419 Spring Retainer (Item 14)
		12420-C Pivot Pin (Item 12)
		12423 Pressure Pin (Item 7)
		12433 Pressure Spring (Item 6)
		12340 6-32 x 1/2 Rd. Hd. Screw (Item 9)
		12448 6-32 Hex Nut (Item 11)
		12453 Lead Wire Insulator (2 used)
		12457 Pickup Wire Assembly
		12458W Cartridge (Item 3)
		12459 3-48 x 1/8 Screw (Item 4) (2 used)
2		Cartridge Mounting Bracket
3	12458W	Pickup Cartridge - Webster
	12458AT	Pickup Cartridge - Astatic
4	12459	Cartridge Mounting Screw - #3-48 x 1/8 in.
5		Stylus Selector Knob - Complete with Set Screw
6	12433	Needle Pressure Spring
7	12423	Needle Pressure Pin
*8	12310	Turntable Assembly - Consists of:
		12311 Turntable
		12312 Turntable Pinion
		12313 Turntable Bushing
9	12340	Retaining Screw
10	12414	Pickup Arm Pivot Yoke
11	12448	Upper "U" Clamp Nut
12	12420-C	Tone Arm Pivot Pin
13	12427	Turntable Washer
14	12419	Spring Retainer
15	12417	Height Adjustment Screw
16	12416	Tone Arm Height Adjustment Lock
17	12314	Turntable Lock Ring
18	12449	Balance Arm Bumpers
19	12388	Balance Arm
19A	12397	Balance Arm Pin
20	12390	Balance Arm Pin Bracket
21	12391	Short Hinge Pin
21A	12389	Long Hinge Pin
22	12386	Record Shelf Screw
23	12394	Balance Arm Spring
24	12396	Balance Arm Spring Anchor
25	12395	Shutoff Spring
26	12393	Upper Shutoff Lever
	*12323	Shutoff Lever Sub-Assembly - Consists of:
		12392 Shutoff Dog (Item 34)
		12393 Upper Shutoff Lever (Item 26)
		12399 Lower Shutoff Lever (Item 32)
		12425 .050 in. Shoulder Rivet (2 used)
		12408 Shutoff Lever Stud (Item 28A)
27	12384	Record Support Channel
	*12401	Automatic Shutoff and Record Support Assembly - Consists of:
		12449 Balance Arm Bumpers (Item 18)

REF. NO.	PART NO.	DESCRIPTION
		12388 Balance Arm (Item 19)
		12397 Balance Arm Pin (Item 19A)
		12390 Balance Arm Pin Bracket (Item 20)
		12391 Short Hinge Pin (Item 21)
		12389 Long Hinge Pin (Item 21A)
		12386 Record Shelf Screw (Item 22)
		12394 Balance Arm Spring (Item 23)
		12396 Balance Arm Spring Anchor (Item 24)
		12395 Shutoff Spring (Item 25)
		12323 Shutoff Lever Sub-Assembly (Item 26)
		12384 Record Support Channel (Item 27)
		12415 "E" Ring (Item 29)
		12405 Record Support Anchor (Item 28)
		12402 Pivot Channel (Item 30)
		12406 Anchor Washer (2 used)
		12440 Record Channel Spring (Item 31)
		12409 Hinge Stud
		12385 Record Shelf (Item 33)
		12424 Tinnerman Nut
28	12405	Record Support Anchor
28A	12408	Shutoff Lever Stud (see Exploded View)
29	12415	"E" Ring
30	12402	Pivot Channel
31	12440	Record Channel Spring
32	12399	Lower Shutoff Lever
33	12385	Record Shelf
34	12392	Shutoff Dog
35	12398	Cover Plate
*36	12301A	Base Plate Sub-Assembly - Complete with 12301 Base Plate, Riveted Parts and Bushings
*37	12315	Record Spindle Assembly
38	12321	Spindle Stud Screw - (7 used)
39	12344	Trip Lever Retainer
*40	12341	Trip Lever Assembly - Consists of:
		12342 Trip Lever
		12369 Trip Idler Wheel
		12426 Shoulder Rivet
41	12336	Trip Pawl
42	12333	Trip Lock
43	12337	Trip Pawl Spring
44	12332	Gravity Pawl
45	12334	Driven Gear
	*12335	Gear Assembly - Complete with Riveted Parts:
		12336 Trip Pawl (Item 41)
		12426 Shoulder Rivet (3 used)
		12333 Trip Lock (Item 42)
		12407 Slide Washer
		12337 Trip Pawl Spring (Item 43)
		12332 Gravity Pawl (Item 44)
		12338 Gear Wheel Fulcrum
		12334 Gear (Item 45)
46	12418	Plunger Pin
47	12413	Lock Ring
48	12412	Swing Post
49	12447	Ball Bearing Washer
50	12432	3/32 in. Ball Bearing
51	12381	Cotter Pin
52	12354	Tone Arm Riser Lever Washer
53	12380	Selector Button
54	12379	Motor Speed Button
55	12428	Tapped Washer
56	12429	Trip Arm Compression Spring
57	12363	Index Lever
	*12365	Index Lever Assembly - Consists of:
		12366 Index Lever Guide Pin
		12363 Index Lever (Item 57)
		12364 Index Selector (Item 94)
		12425 Shoulder Rivet
58	12368	Index Arm Retaining Ring
59	12361	Index Pin Sleeve
60	12435	Lower Clamp Screw
61	12345	Trip Arm
62	12456	Hex Head Nut, #10-32
63	12346	Index Arm or Clamp
	*12348	Lower Clamp Assembly - Consists of
		12412 Swing Post (Item 48)
		12435 Lower Clamp Screw (Item 60)
		12345 Trip Arm (Item 61)
		12456 Nut (Item 62)
		12428 Tapped Washer (Item 55)
		12429 Compression Spring (Item 56)
		12347 Index Arm Clutch Plate (Item 63A)
		12403 Trip Arm Pin
		12430 Washer
		12431 Friction Washer
64	12450	Detent Spring
*65	12358	Clutch Arm Assembly, Complete - Consists of:
		12360 Friction Springs - (2 used) (Item 65A)
		12359 Clutch Arm
		12362 Clutch Pin
65A	12434	Clutch Pin Sleeve
*66	12351	Tone Arm Riser Assembly, Complete Consists of:
		12352 Tone Arm Riser Cam
		12353 Riser Lever Pivot Pin
		12355 Tone Arm Riser Lever Roller
		12356 Tone Arm Riser Lever Rivet
67	12357	Riser Lever Spring
68	12371	Selector Lever
	*12376	Selector Assembly and Automatic Shutoff, Complete - Consists of:
		12371 Selector Lever (Item 68)
		12374 Selector Lever Pivot
		12425 Shoulder Rivet - (2 used)
		12407 Slide Washer - (2 used)
		12373 Shutoff Trigger (Item 74)
		12372 Reject Spring (Item 75)
		12451 Selector Lever Escapement Spring (Item 73)
69	12438	Bearing Washer
70	12461	Friction Spring Washer
71	12436	Sems Fastener
72	12377	Selector Return Spring
73	12451	Selector Lever Escapement Spring
74	12373	Shutoff Trigger
75	12372	Reject Spring
76	12378	Motor Speed Lever
77	12349	Grommet-Motor Speed Lever (2 used - 1 on Speed Lever -

REF. NO.	PART NO.	DESCRIPTION
		1 on Pickup)
		(wire hole in baseplate)
77A	12350	Grommet - Motor Pin
78	12381	Motor Button Cotter
79	12370	Cam Wheel
80	12367	Index Arm Spring
81	12442	Washer
82	12340	Retaining Screw
83	12404	Motor Pin "E" Ring
84	12441	Motor Mounting Screws
85	12442	Motor Mounting Washers
86		Motor Mounting Spacers
87		Motor Grommet
88	12382	Motor Assembly (When reordering specify speeds, voltage, and cycle)
89	12329	Ejector Adjusting Stud
90	12328	Ejector Roller
91	12330	Ejector Lock Nut
92	12327	Ejector Guide
	*12325	Ejector Pin Assembly - Complete
		Consists of:
		12329 Ejector Adjusting Stud (Item 89)
		12328 Ejector Roller (Item 90)
		12330 Ejector Lock Nut (Item 91)
		12326 Ejector Pin
		12327 Ejector Guide (Item 92)
93	12331	Ejector Pin Spring
94	12364	Index Selector
95	12343	Power Switch
96	12462	Ground Wire and Connector
97	12444	Power Wire Insulator
98	12426	Shoulder Rivet
99	12407	Slide Washer
100	12424	Tinnerman Nut
101	12454	Mounting Springs (3 used)

MOTOROLA
MODEL 801

TRADE NAME	Motorola, Model 801
MANUFACTURER	Motorola Inc., 4545 Augusta Blvd., Chicago, Illinois
TYPE SET	Battery Operated Universal Automotive Superheterodyne Receiver
TUBES (EIGHT)	Types 6BA6 RF Amp., 6BE6 Converter, 6BA6 IF Amp., 6AT6 DET.-AVC-AF, 6AT6 Phase Inverter, (2) 6AQ5 Power Output, 6X4 Rectifier
POWER SUPPLY	6 Volt Storage Battery — RATING 7 Amp. @ 6.3 Volts DC
TUNING RANGE—BROADCAST	535-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (Grid) of 6BE6 (V2). Low side to chassis.	455KC (400∿ Mod.)	Tuning cores fully out.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Fig. 1	High side thru dummy to ant. receptacle. Low side to chassis.	1610KC	Tuning cores fully out. Make sure the tuner is on manual. Check to see that cores project 1 1/8ins. out of cans.	"	A5, A6, A7	"
3.	"	"	1425KC	Turn tuning cores in until the tuner core carriage plate is exactly 1 43/64 ins. from the coil shield plate.	"	A8, A9, A10	"

After set is installed, fully extend antenna and tune in a weak station near 1400KC. Adjust A7 for maximum volume.

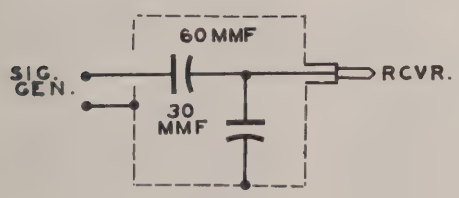


FIG. 1

PUSHBUTTON ADJUSTMENTS

Since the pushbuttons are mechanical any button may be adjusted to any station within the receivers tuning range. Press the "M" button and carefully tune in the desired station. Press the selected pushbutton and wait for the tune to complete it's cycle. Press the tuner reset button inward until a click is heard. Turn the station set-up shaft until the previously selected station is again heard. Carefully adjust for loudest and clearest signal. Check the setting by pressing the "M" button and then the station selector button. There should be no difference in loudness or clarity between the two buttons. Repeat the procedure for each button.

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1951 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		MOTOROLA PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	6BA6	6BA6	7BK	
V2	Converter	6BE6	6BE6	7CH	
V3	IF Amplifier	6BA6	6BA6	7BK	
V4	Det.-AVC-AF	6AT6	6AT6	7BT	
V5	Phase Inverter	6AT6	6AT6	7BT	
V6	Power Output	6AQ5	6AQ5	7BZ	
V7	Power Output	6AQ5	6AQ5	7BZ	
V8	Rectifier	6X4	6X4	5BS	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	30	350	23A473015	AF64H4A		UP335-		TVL-3620	■ Filter
B	30	300				330C			▲ Filter
C	20	25							Output Cathode
C2	100		21B77562	SI100	D6-101	5W5T1	GP1K-101	19C11	Fixed Trimmer
C3	.006	100	8A4529	P688-006	D6-562	PTE6D6	GP2-333-602	6TM-D6	RF Coupling
C4	.05	100	8A13514	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C5	5		21K70720	SI5	TCZ-4.7	5X5V5	GP1K-050	MS-55	RF Coupling
C6	50	500	21K74661	1468-00005	D6-500	5W5Q5	GP1K-500	1FM-45	Osc. Grid Cap.
C7	500		21K592327						Fixed Trimmer
C8	.1	400	8R13166	P488-1	DF-104	PTE4P1		4TM-P1	Decoupling
C9	5		21K70720	SI5	TCZ-4.7	5W5V5	GP1K-050	MS-55	IF Coupling
C10	.006	100	8A4529	P688-006	D6-562	PTE6D6	GP2-333-602	6TM-D6	Audio Coupling
C11	1000	500	21R6638	1468-001	D6-102	1W5D1	GP2L-102	1FM-21	AF Amp. Plate
C12	.006	400	8K71910	P688-006	D6-562	PTE6D6	GP2-333-602	6TM-D6	Tone Comp.
C13	.1	200	8R472035	P288-1	DF-104	PTE4P1		2TM-P1	Bias Filter
C14	.5	100	8K17028	P185-5				68P20	Hash Filter
C15	.03	400	8R71911	P688-03		PTE6S3		6TM-S3	Audio Coupling
C16	.03	400	8R71911	P688-03		PTE6S3		6TM-S3	Audio Coupling
C17	.003	1000	8R13165	P1088-003		PTE16D3		MB-D3	Output Plate
C18	.006	1600	8K12840	P1688-006		PTE16D6		MB-D6	Buffer
C19	.5	100	8K17028	P185-5				68P20	Hash Filter

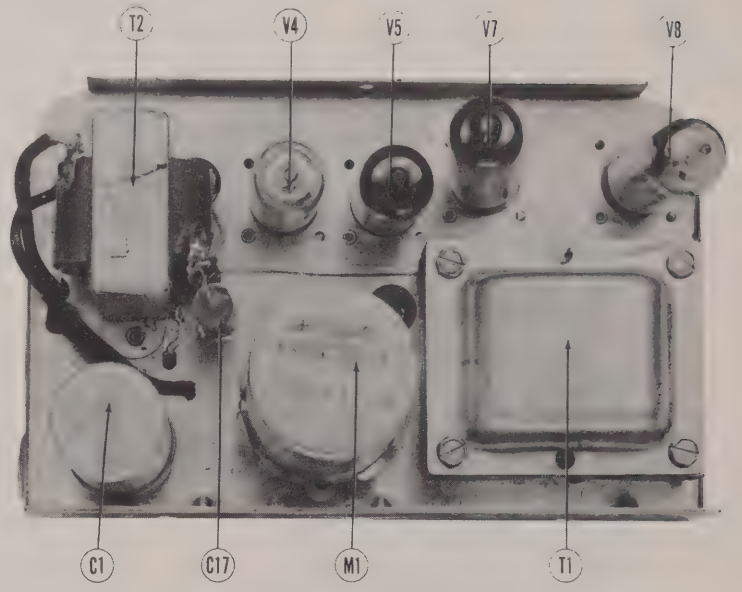
CONTROLS

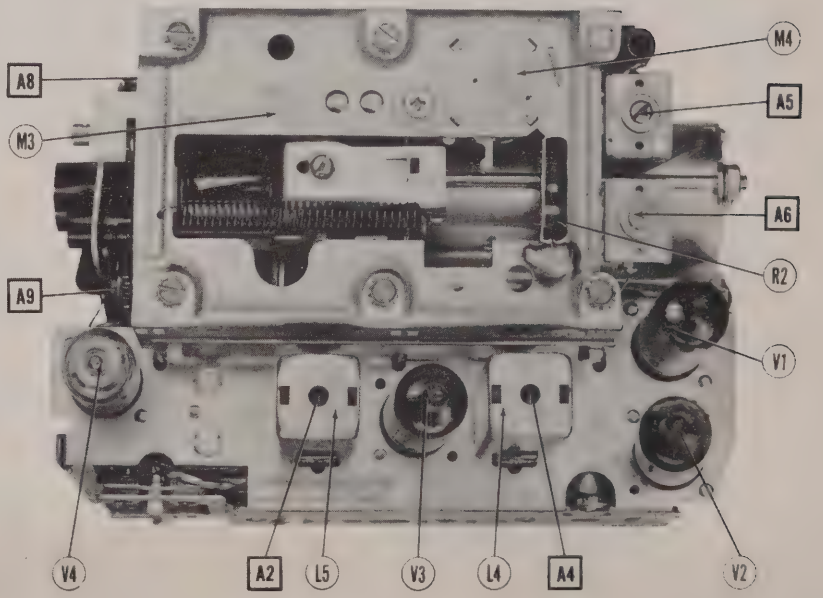
ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1	500KΩ	½	18A472523				Volume Control and SW

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MOTOROLA PART No.	IRC PART No.	
R2	5.6Ω	1	17K484497	BW-1-5.6	Solenoid Shunt - Wire Wound
R3	470KΩ	½	6R6032	BTS-470K	RF Amp. Grid
R4	470Ω	½	6R6090	BTS-470	RF Amp. Cathode
R5	100KΩ	½	6R6075	BTS-100K	Conv. Grid
R6	47KΩ	½	6R6056	BTS-47K	Osc. Grid
R7	470Ω	½	6R6090	BTS-470	IF Amp. Cathode
R8	6800Ω	2	6R6287	BTB-6800	Decoupling
R9	1Meg.	½	6R6004	BTS-1Meg.	AVC Network
R10	1Meg.	½	6R6004	BTS-1Meg.	Diode Load
R11	47KΩ	½	6R6056	BTS-47K	Diode Filter
R12	2.2Meg.	½	6R3927	BTS-2.2Meg.	Tone Compensation
R13	47KΩ	½	6R6056	BTS-47K	Tone Compensation

CHASSIS—TOP VIEW





PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MOTOROLA PART No.	IRC PART No.	
R14	10Meg.	½	6R2109	BTS-10Meg.	AF Amp. Grid
R15	2200Ω	½	6R6290	BTS-2200	AF Amp. Cathode
R16	470KΩ	½	6R6032	BTS-470K	AF Amp. Plate
R17	10KΩ	½	6R6054	BTS-10K	Phase Inv. Grid
R18	2200Ω	½	6R6290	BTS-2200	Phase Inv. Cathode
R19	220KΩ	½	6R6015	BTS-220K	Phase Inv. Plate
R20	220KΩ	½	6R6015	BTS-220K	Output Grid
R21	220KΩ	½	6R6015	BTS-220K	Output Grid
R22	270Ω	1	6R6336	BTA-270	Output Cathode
R23	1500Ω	2	6R6286	BTB-1500	Filter
R24	10KΩ	½	6R6054	BTS-10K	Buffer
R25	470Ω	½	6R3949	BTS-470	Bias Network
R26	56Ω	½	6R5614		Hash Suppressor
R27	56Ω	½	6R5614		Hash Suppressor

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	6.3V @ 3.6A	460VCT .005ADC			25K590650		P-3068	VT-1 ①

① Drill one new mounting hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	8.3KΩ CT	3.6Ω	530Ω CT	.7Ω	25B502331	A-3850	A-2900 ①	R0-110 ①	① Drill one new mounting hole.

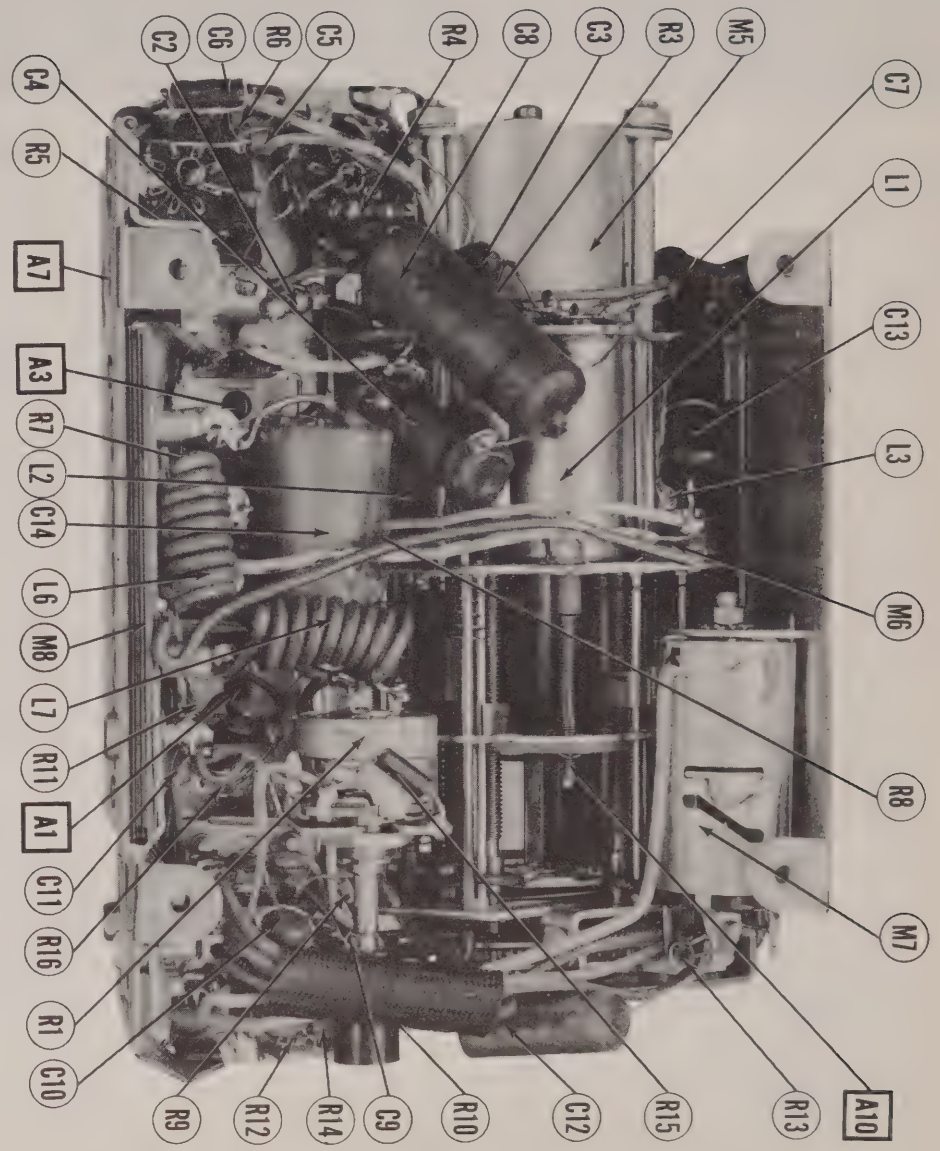
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	V. C. IMP.	MOTOROLA PART No.	JENSEN PART No.	QUAM PART No.	
SP1	PM	3.6Ω	50K502269 or 50B502802	ST108 Model P6-X	6A15	
	CONE DIA.	V. C. DIA.				
SP2	5 7/8"	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	MOTOROLA PART No.	MEISSNER PART No.	
L1	Ant. Coil	13Ω		24B71881		
L2	RF Coil	13Ω		24B71881		
L3	Osc. Coil	13Ω	.8Ω	24B592153		
L4	1st. IF Coil	20Ω	20Ω	24B485553		
L5	2nd. IF Coil	19Ω	19Ω	24B485555		
L6	RF Choke	0Ω		24K592269		
L7	RF Choke	0Ω		24K592269		
L8	Hash Choke	.1		24A472535		

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

VIBRATOR

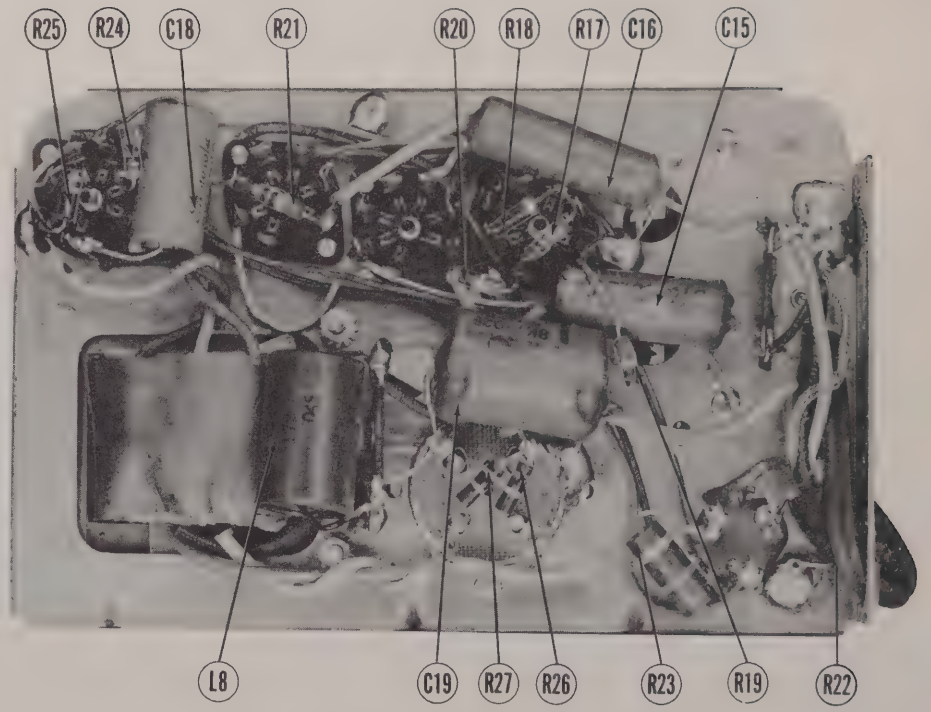
ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA			INSTALLATION NOTES
				MOTOROLA PART No.	CORNELL-DUBILIER PART No.	RADIART PART No.	
M1	INT	6.3V	115∿	48B3333	5342	5342	

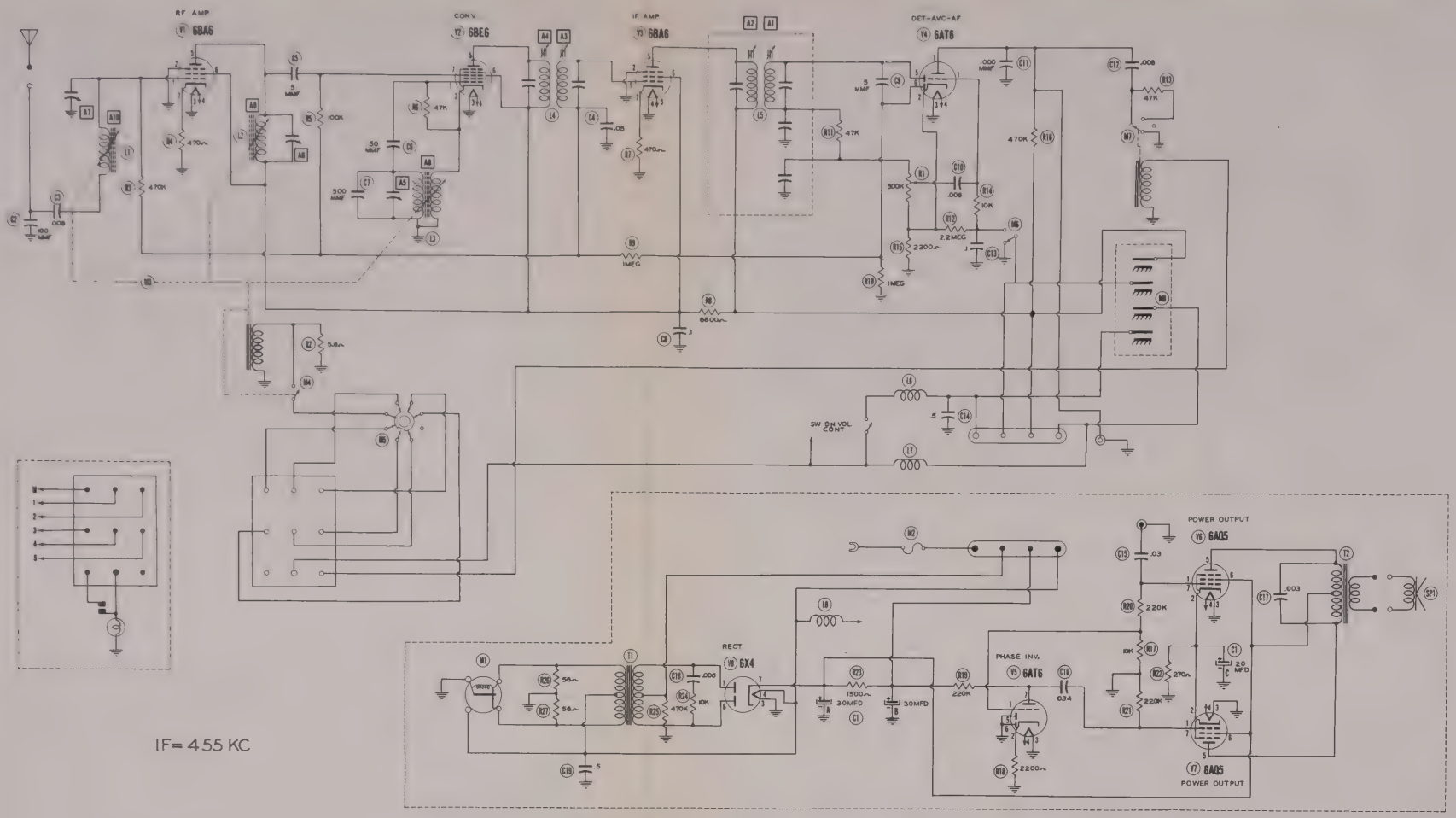
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			MOTOROLA PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M2	SFE	20Amp	65K4637	9K592646 ②	307020	155020A	② Includes fuse

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M3	Tuner Unit	1X592280	
M4	Switch	1B70944	Solenoid
M5	Switch	40B70952	Selector
M6	Switch	40A472644	Mute
M7	Tone Relay	1X592220	
M8	Spark Plate	1B592133	
A5	Trimmer	20K472612	Osc. Adj.
A6	Trimmer	20K481527	RF Adj.
A7	Trimmer	20A592135	Ant. Adj.





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6BA6	-.8VDC	0V	0V	5.6VDC	80VDC	80VDC	1.5VDC
V 2	6BE6	1-2.6VDC	0V	0V	5.6VDC	80VDC	80VDC	-2.6VDC
V 3	6BA6	.5VDC	0V	5.8VDC	0V	180VDC	80VDC	1.2VDC
V 4	6AT6	0V	.4VDC	0V	5.6VDC	2.8VDC	.1VDC	45VDC
V 5	6AT6	0V	1VDC	0V	5.6VDC	0V	0V	65VDC
V 6	6AQ5	0V	12VDC	0V	5.8VDC	175VDC	180VDC	0V
V 7	6AQ5	0V	12VDC	0V	5.8VDC	175VDC	180VDC	0V
V 8	6X4	235VAC	0V	0V	5.2VDC	225VAC	235VAC	180VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6BA6	2.5Meg.	0Ω	0Ω	.4Ω	†8.5KΩ	†8.3KΩ	470Ω
V 2	6BE6	47KΩ	8Ω	0Ω	.4Ω	†8.3KΩ	†8.3KΩ	2.1Meg
V 3	6BA6	2Meg	0Ω	.4Ω	0Ω	†1.5KΩ	†8.3KΩ	470Ω
V 4	6AT6	12Meg	2.2KΩ	0Ω	4Ω	550KΩ	1Meg	†470KΩ
V 5	6AT6	10KΩ	2.2KΩ	0Ω	.4Ω	0Ω	0Ω	†221KΩ
V 6	6AQ5	220KΩ	220Ω	0Ω	4Ω	†265Ω	10Ω	230KΩ
V 7	6AQ5	220KΩ	27Ω	0Ω	4Ω	†265Ω	10Ω	220KΩ
V 8	6X4	470Ω	0Ω	0Ω	4Ω	350Ω	470Ω	100KΩ

† MEASURED FROM PIN 7 OF V8

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to commen negative.
4. Battery voltage maintained at 6.3 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance measurements.
6. Volume control at maximum, no signal applied for voltage measurements.

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PHOTOFACT* Folder

PHILCO MODELS 51-T1601, T, 51-T1602, 51-T1607 (Codes 121, 122), 51-T1634 (Codes 123, 124)

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MODEL 51-T1601

PHILCO MODELS 51-T1601, T, 51-T1602, 51-T1607 (Codes 121, 122), 51-T1634 (Codes 123, 124)

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DATE 7-51 SET 138 FOLDER 7

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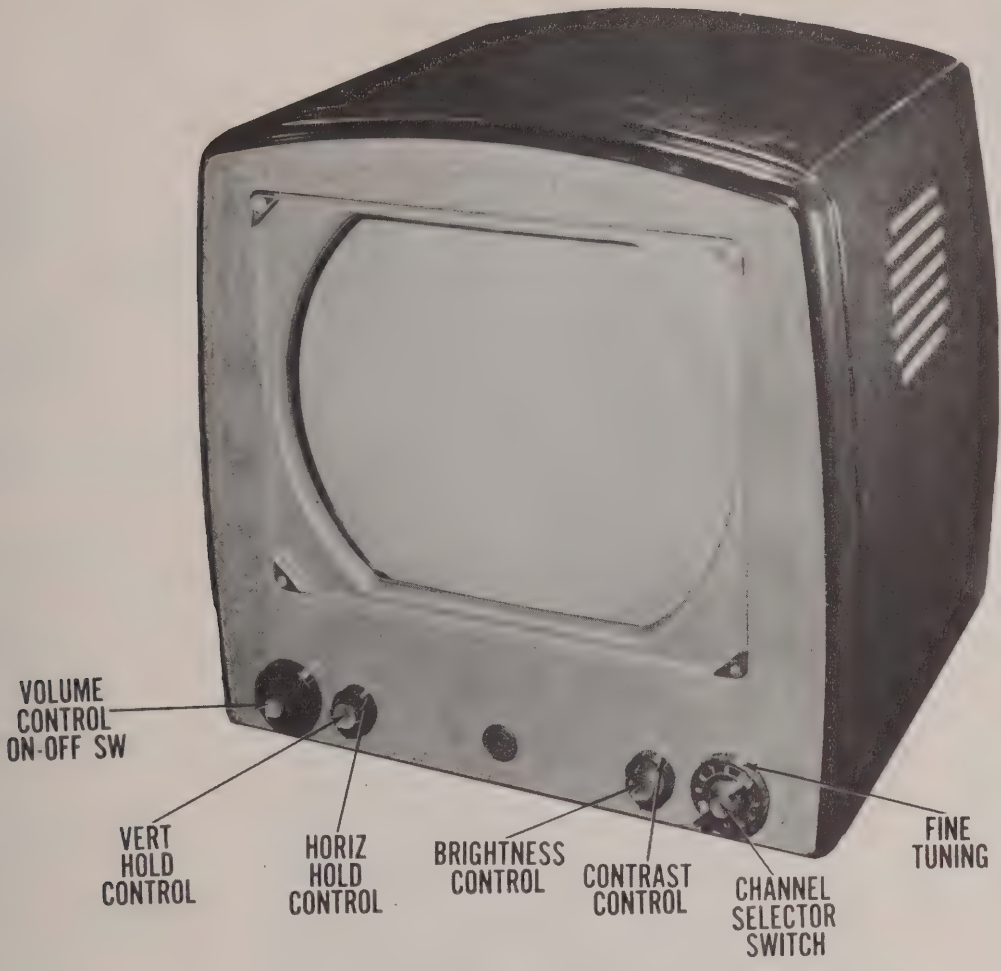
PHILCO MODELS 51-T1601, T, 51-T1602, 51-T1607 (Codes 121, 122), 51-T1634 (Codes 123, 124)



PHILCO MODEL 51-T1601

TRADE NAME	Philco, Models 51-T1601, 51-T1601T, 51-T1602, 51-T1607 (All Codes 121 & 122), 51-T1634 (Codes 123 & 124)
MANUFACTURER	Philco Corp., Tioga & "C" Sts., Philadelphia, Pa.
TYPE SET	Television Receiver
TUBES	Twenty-three
POWER SUPPLY	110-120 Volts AC-60Cycle
RATING	2.4 Amp. @ 117 Volts AC
TUNING RANGE-	CHANNELS 2 thru 13

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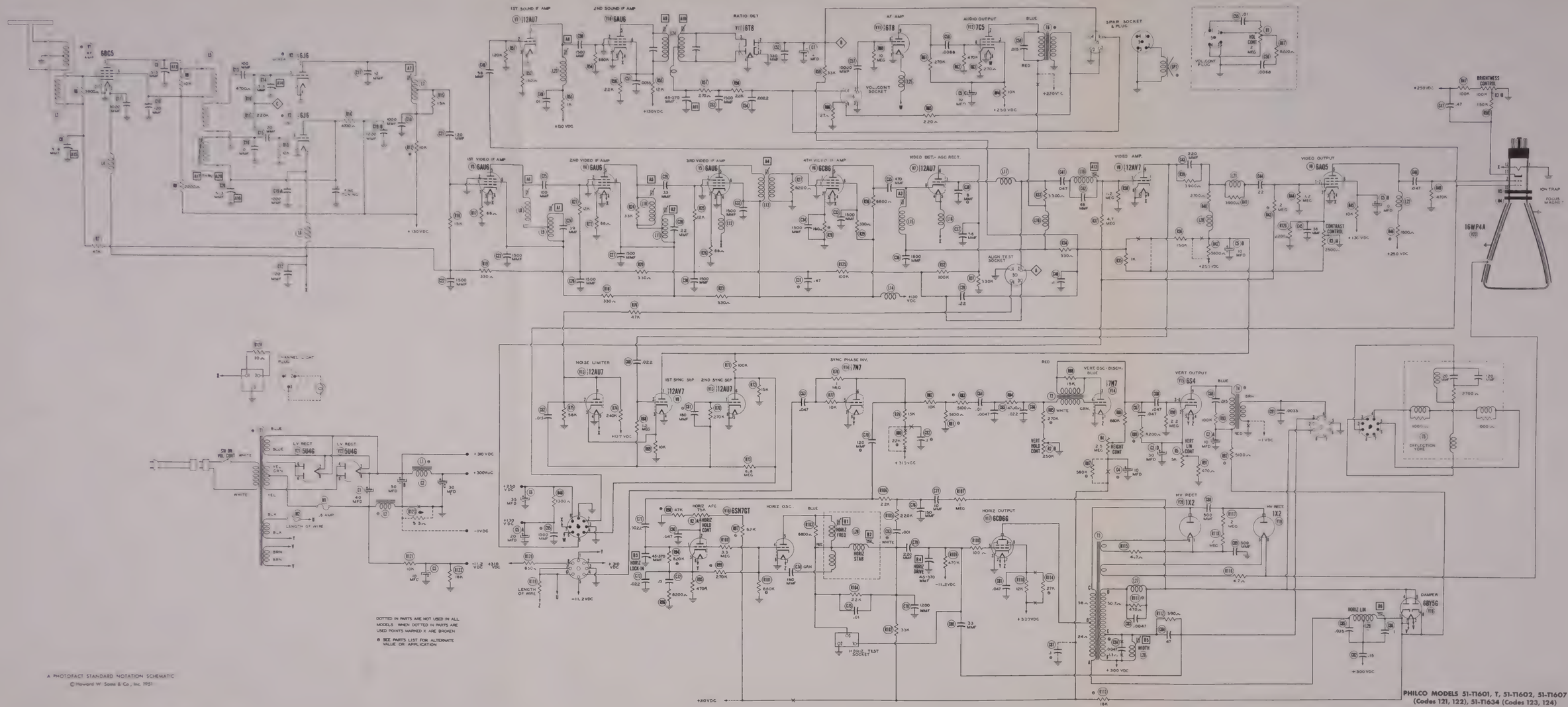
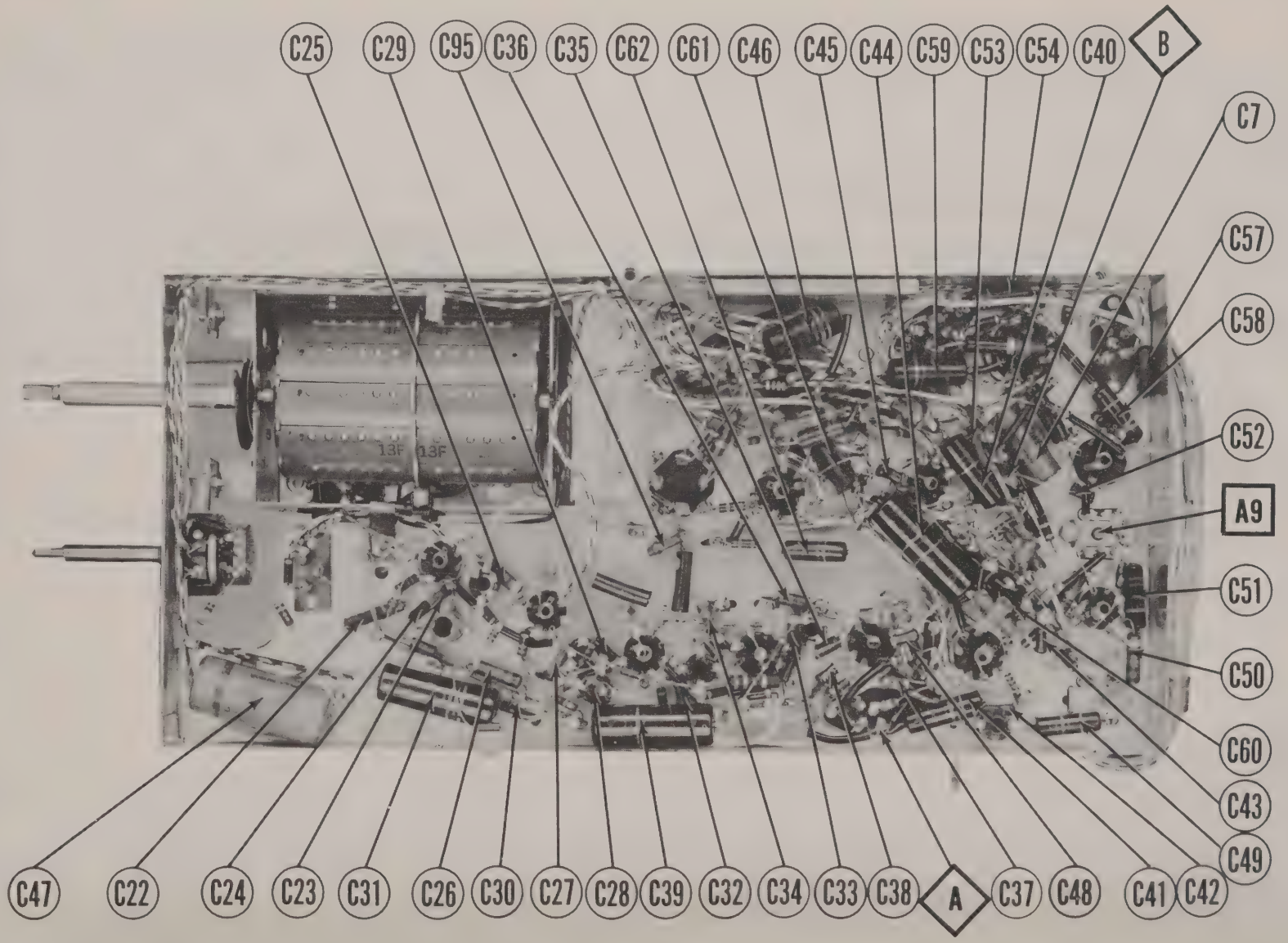


PHILCO MODELS 51-T1601, T, 51-T1602, 51-T1607
(Codes 121, 122), 51-T1634 (Codes 123, 124)

PHILCO MODELS 51-T1601, T, 51-T1602, 51-T1607
(Codes 121, 122), 51-T1634 (Codes 123, 124)

RF-IF CHASSIS-TOP VIEW



RF-IF CHASSIS-BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

PHILCO MODELS 51-T1601, T, 51-T1602, 51-T1607
(Codes 121, 122), 51-T1634 (Codes 123, 124)

TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The end of the high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube, (V2), and replace it with a tube which has Pin 1 removed. This will disable the local oscillator and prevent the possiblity possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to the ungrounded lead of C31, connect the positive lead to chassis.
Pre-set A1 and A2 fully counter-clockwise.
Pre-set A5 and A6 to the approximate center of their ranges.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	Not used	29.1MC (400∿Mod.)	Any	Vert. Amp. to Point (A). Low side to chassis.	A1	Disconnect bias battery and short AGC line to chassis. Adjust for MINIMUM 400∿ indication scope.
2.	"	"	"	21.85MC	"	"	A2	"
3.	"	"	"	24.75MC	"	"	A3	Reconnect bias battery. Adjust for maximum 400∿ indication on scope. Attenuate sig. gen. to maintain 2 volts peak to peak indication.
4.	"	"	"	26.25MC	"	"	A4	"
5.	"	"	"	26.6MC	"	"	A5	"
6.	"	"	"	23.1MC	"	"	A6	"
7.	"	"	"	23.5MC	"	"	A7	"
8.	"	"	24.5MC (10MC SWP)	22.5MC 24.5MC 26.6MC	"	"		Check for response curve within the limits of fig. 1 If more than a slight change of A3 thru A7 is required to bring the response within the limits shown, repeat steps 1 thru 7. A response within the limits of fig. 1 with little or no retouching of A3 thru A7 is more desirable than an ideal response.

SOUND IF ALIGNMENT

Connect a low range output meter across the speaker voice coil.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
9.	2200Ω carbon resistor	High side thru 2200Ω to Point A . Low side to chassis.	4.5MC (400∿ AM Mod.)	Any	DC probe to Point (B). Common to chassis.	A8, A9, A10	Adjust for maximum deflection. When adjusting A10, maximum deflection on the VTVM should coincide with MINIMUM on the output meter.
10.	"	"	"	"	"	A10, A11	Adjust for MINIMUM output.

After alignment is finished, restore set to original operation and tune in a local TV station. Turn the fine tuning control for a slightly fuzzy picture. Adjust A10 and A 11 for MINIMUM buzz.

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	2200Ω carbon resistor	High side thru 2200Ω to Point A . Low side to chassis.	Not used	4.5MC (400∿ Mod.)	Any	Vert. Amp. thru detector, (fig. 2), to pin 2 of picture tube. Low side to chassis.	A12	Adjust for MINIMUM 400∿ indication on scope.

RF ALIGNMENT (TUNER NO. 76-5411-1)

Remove the dummy converter tube and replace the original tube in its socket.
Remove the channel 10 antenna coil strip, and turn the channel switch to channel 10.
Remove the side cover plate from the tuner.
Short the grid, (pin 1), of V3 to chassis.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12.	.001MFD	High side to pin 1 (Grid) of 6BC5 (V1). (Terminal 7 of the coil contact strip). Low side to chassis.	195MC (10MC SWP)	193.25MC 197.75MC	10	Vert. Amp. to Point (C). Low side to chassis.	A13, A14	Adjust for maximum amplitude and symmetry.
13.	Two 120Ω carbon resistors	Across antenna terminal with 120Ω in each lead.	"	"	"	"	A15	Replace the channel 10 antenna strip and adjust A15 for response curve within the limits of fig. 3.
14.	"	"	213MC (10MC SWP)	211.25MC 215.75MC (Also Channels 12, 11, 10, etc., See frequencies below.)	13	"		Check all channels for response similar to fig. 3. If markers fall out of the limits of fig.3 on any channel, make slight adjustment of A13, A14, and A15 with channel switch set for that channel. Recheck all channels to see that they have not been seriously affected.

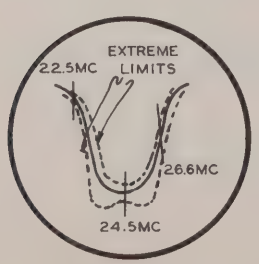


FIG.1

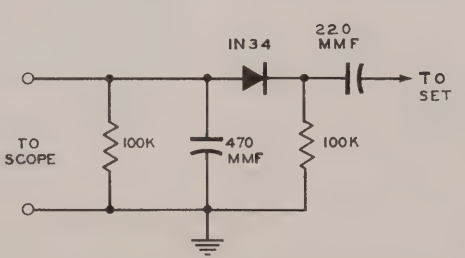


FIG.2

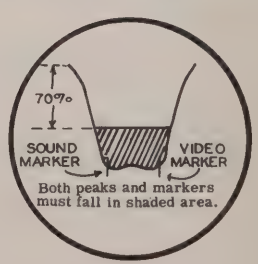


FIG.3

ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT (TUNER NO. 76-5411-1)

Remove the short between Pin 1 of V3 and chassis.
Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency approximately the same amount for a majority of the channels, it may be possible to correct them in one step using A16. If adjustment of A16 will not bring all channels well within the range of the fine tuning control, it will be necessary to adjust the channel strip adjustment for each channel that is off frequency. The channel strip adjustments are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
15.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.76MC	13	Vert. Amp. to Point (A). Low side to chassis.	A17	Adjust to place video marker at 50% response as shown in fig. 4.
			207MC (10MC SWP)	205.25MC 209.75MC	12		A18	
			201MC (10MC SWP)	199.25MC 203.75MC	11		A19	
			195MC (10MC SWP)	193.25MC 197.75MC	10		A20	
			189MC (10MC SWP)	187.25MC 191.75MC	9		A21	
			183MC (10MC SWP)	181.25MC 185.75MC	8		A22	
			177MC (10MC SWP)	175.25MC 179.75MC	7		A23	
			85MC (10MC SWP)	83.25MC 85.75MC	6		A24	
			79MC (10MC SWP)	77.25MC 81.75MC	5		A25	
			69MC (10MC SWP)	67.25MC 71.75MC	4		A26	
			63MC (10MC SWP)	61.25MC 65.75MC	3		A27	
			57MC (10MC SWP)	55.25MC 59.75MC	2		A28	

RF ALIGNMENT (TUNER NO. 76-5747)

Remove the dummy converter tube and replace the original tube in its socket.
Unsolder the white lead from the tuner and connect the negative lead of a 1.5 volt battery to it. Connect the battery position lead to chassis.
Unsolder the red lead from the tuner and solder a 3300Ω resistor in series with it. The tuner end of the resistor is alignment Point D as shown on the schematic.
Connect a 330Ω resistor between the green lead from the tuner and chassis.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. Amp. to Point (D). Low side to chassis.	A29, A30 A31	Adjust A29 for maximum curve height and symmetry. Adjust A30 and A31 for symmetrical response centered about 213MC.
"	"	177MC (10MC SWP)	175.25MC 179.75MC	7	"	A32, A33	Carefully observe the response curve with respect to "tilt" and center frequency. Adjust A32 and A33 until the response is a mirror image of the original, that is, tilted; in the opposite direction with the center frequency off the same amount in the opposite direction. This is necessary to compensate for the channel 13 adjustments. See figs. 5A and 5B for example of compensation. Repeat steps 16 and 17 until proper response is obtained on both channels 7 and 13.
"	"	85MC (10MC SWP)	83.25MC 87.75MC	6	"	A34, A35 A36	Adjust A34 for maximum curve height and symmetry. Adjust A35 and A36 for symmetrical response centered about 85MC.

OSCILLATOR ALIGNMENT (TUNER NO. 76-5747)

re-set the fine tuning control so the stop on the fine tuning cam is centered on the channel 6 oscillator adjustment screw.
he signal generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
/o 120Ω :rbon esistors	Across antenna terminals with 120Ω in each lead.	Not used	237.85MC (unmod.)	13	Vert. Amp. to Point (D). Low side to chassis.	A37	Adjust for zero beat indication on scope, this will be indicated by a narrow trace between two wide traces.
"	"	"	225.85MC	11	"	A38	"
"	"	"	213.85MC	9	"	A39	"
"	"	"	207.85MC	8	"	A40	Check the oscillator frequency on channel 8. If the oscillator frequency is high turn A40 several turns clockwise. If the oscillator frequency is low turn A40 several turns counter-clockwise. Repeat steps 19, 20, 21, and 22 until channels 13, 11, 9, and 8 are within 500KC of the correct frequency.
	"	"	201.85MC	7	"	A41	Adjust for zero beat as in step 19.
	"	"	109.85MC	6	"	A42	"
	"	"	93.85MC	4	"	A42	"
	"	"	81.85MC	2	"	A44	"

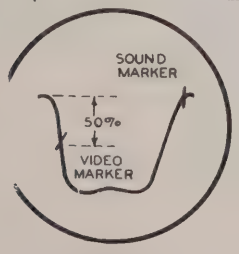


FIG. 4

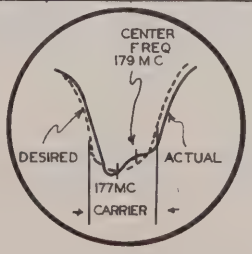


FIG.5A

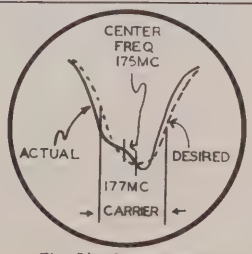


Fig. 5A Compensated
FIG.5B

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	1.4VDC	0V	6.3VAC	0V	105VDC	105VDC	0V		
V 2	6J6	90VDC	110VDC	6.3VAC	0V	-1.7VDC	§-5.2VDC	0V		
V 3	6AU6	-.4VDC	0V	0V	6.3VAC	120VDC	120VDC	.6VDC		
V 4	6AU6	-.3VDC	0V	0V	6.3VAC	125VDC	125VDC	.6VDC		
V 5	6AU6	-.3VDC	0V	0V	6.3VAC	130VDC	130VDC	.8VDC		
V 6	6CB6	0V	9VDC	0V	6.3VAC	120VDC	130VDC	0V		
V 7	12AU7	120VDC	0V	1.6VDC	6.3VAC	6.3VAC	-.4VDC	1.8VDC	2.6VDC	0V
V 8	12AU7	180VDC	-.2VDC	8VDC	0V	0V	125VDC	-.6VDC	0V	6.3VAC
V 9	6AQ5	-1VDC	7.2VDC	0V	6.3VAC	230VDC	125VDC	-1VDC		
V 10	6AU6	-.6VDC	0V	0V	6.3VAC	65VDC	65VDC	0V		
V 11	6T8	-.4VDC	-.6VDC	-.4VDC	0V	6.4VAC	-1.8VDC	0V	-.6VDC	70VDC
V 12	7C5	0V	310VDC	220VDC	0V	245VDC	.1VDC	9.8VDC	6.5VAC	
V 13	12AU7	8.6VDC	8.6VDC	8.2VDC	0V	0V	21VDC	-1.3VDC	0V	6.3VAC
V 14	7N7	6.3VAC	0V	85VDC 190VDC	-32VDC	-.4VDC	53VDC	0V	0V	
V 15	6S4	0V	7VDC 40VDC	.2VDC	6.3VAC	0V	.2VDC	0V	0V	410VDC
V 16	6SN7GT	-9VDC	115VDC	-13VDC	-65VDC	310VDC	0V	6.3VAC	0V	
V 17	6CD6G	0V	0V	0V	-23VDC	-23VDC	310VDC	6.3VAC	115VDC	TOP CAP *
V 18	6BY5G	480VDC	#6.3VAC	0V	300VDC	300VDC	0V	480VDC	480VDC	
V 19	1X2	* DO NOT MEASURE								
V 20	1X2	* DO NOT MEASURE								
V 21	5U4G	0V	310VDC	0V	300VAC	0V	300VAC	0V	310VDC	
V 22	5U4G	0V	310VDC	0V	300VAC	0V	300VAC	420VDC	310VDC	
V 23	16WP4A	0V	0V	PIN 10 310VDC	PIN 11 0V	PIN 12 6.3VAC				

ALL MEASUREMENTS ARE TAKEN WITH PICTURE TUBE REMOVED
* DO NOT MEASURE
§ TAKEN WITH VACUUM TUBE VOLTMETER
# MEASURED FROM PIN 7 OF V18

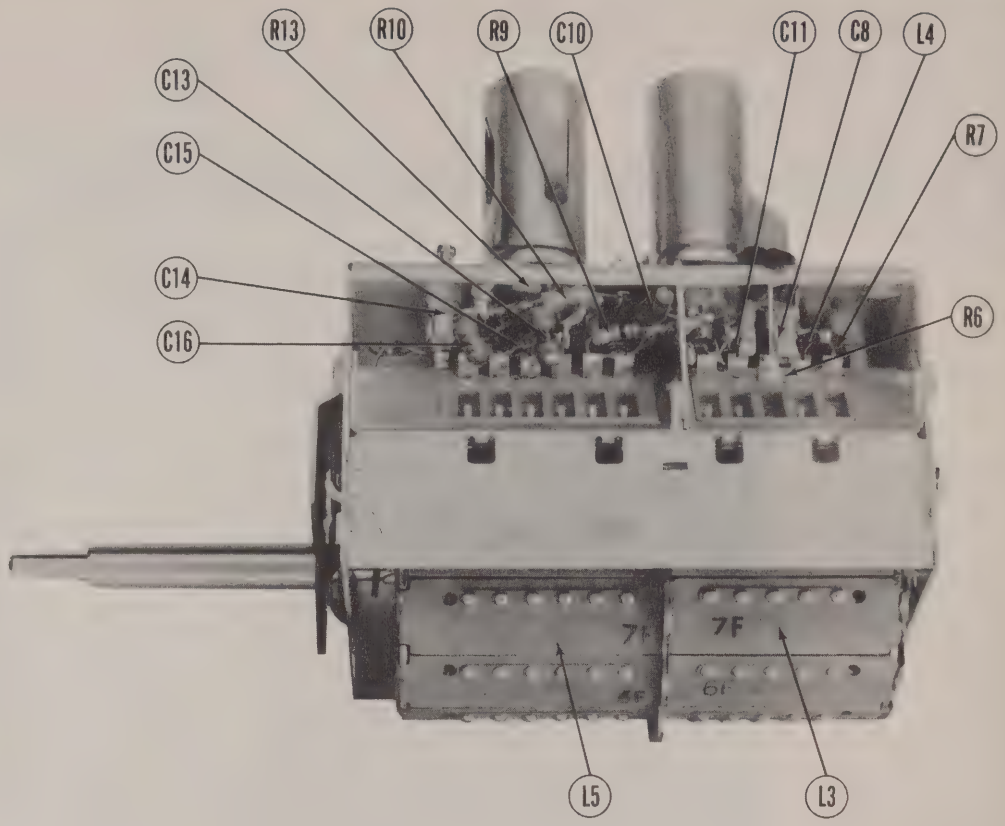
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	578KΩ	0Ω	.2Ω	0Ω	†4.1KΩ	†4.1KΩ	0Ω		
V 2	6J6	†6.8KΩ	†12KΩ	.2Ω	0Ω	224KΩ	10KΩ	0Ω		
V 3	6AU6	545KΩ	0Ω	0Ω	.1Ω	†2.6KΩ	†2.6KΩ	68Ω		
V 4	6AU6	540KΩ	0Ω	0Ω	.1Ω	†2.3KΩ	†2.3KΩ	68Ω		
V 5	6AU6	540KΩ	0Ω	0Ω	.2Ω	†1.9KΩ	†1.9KΩ	68Ω		
V 6	6CB6	.2Ω	180Ω	0Ω	.2Ω	†8.7KΩ	†2.3KΩ	0Ω		
V 7	12AU7	†2.9KΩ	120KΩ	150Ω	.2Ω	.2Ω	330KΩ	4.8KΩ	1.4KΩ	0Ω
V 8	12AU7	†6.2KΩ	8Meg	10KΩ	0Ω	0Ω	†12.8KΩ	900KΩ	0Ω	.1Ω
V 9	6AQ5	725KΩ	1.3KΩ	0Ω	.3Ω	†2.4KΩ	†11.9KΩ	725KΩ		
V 10	6AU6	680KΩ	0Ω	0Ω	.1Ω	†10.5KΩ	†10.5KΩ	0Ω		
V 11	6T8	Inf.	32KΩ	Inf.	0Ω	.2Ω	Inf.	0Ω	10Meg	†280KΩ
V 12	7C5	0Ω	†650Ω	†10KΩ	0Ω	†650Ω	470KΩ	270Ω	.1Ω	
V 13	12AU7	56KΩ	56KΩ	10KΩ	0Ω	0Ω	15KΩ	7Meg	0Ω	.1Ω
V 14	7N7	.1Ω	0Ω	#3.2Meg #700KΩ	520KΩ	1Meg	13KΩ	0Ω	0Ω	
V 15	6S4	Inf.	5.4KΩ 470Ω	2.2Meg	.1Ω	0Ω	2.2Meg	Inf.	Inf.	#5.1KΩ
V 16	6SN7GT	950KΩ	47KΩ	300KΩ	350KΩ	#50KΩ	0Ω	.1Ω	0Ω	
V 17	6CD6G	Inf.	0Ω	0Ω	488KΩ	488KΩ	#50KΩ	.1Ω	†9KΩ	TOP CAP #35Ω
V 18	6BY5G	100KΩ	#.1Ω	Inf.	†780Ω	†780Ω	Inf.	#0Ω	100KΩ	
V 19	1X2	PINS 1 THRU 9 INFINITE RESISTANCE								TOP CAP # 92Ω
V 20	1X2	PINS 1 THRU 9 INFINITE RESISTANCE								TOP CAP Inf.
V 21	5U4G	Inf.	14KΩ	Inf.	65Ω	Inf.	65Ω	Inf.	14KΩ	
V 22	5U4G	Inf.	14KΩ	Inf.	62Ω	Inf.	62Ω	#5KΩ	14KΩ	
V 23	16WP4A	0Ω	470KΩ	PIN 10 †0Ω	PIN 11 230KΩ	PIN 12 .1Ω				

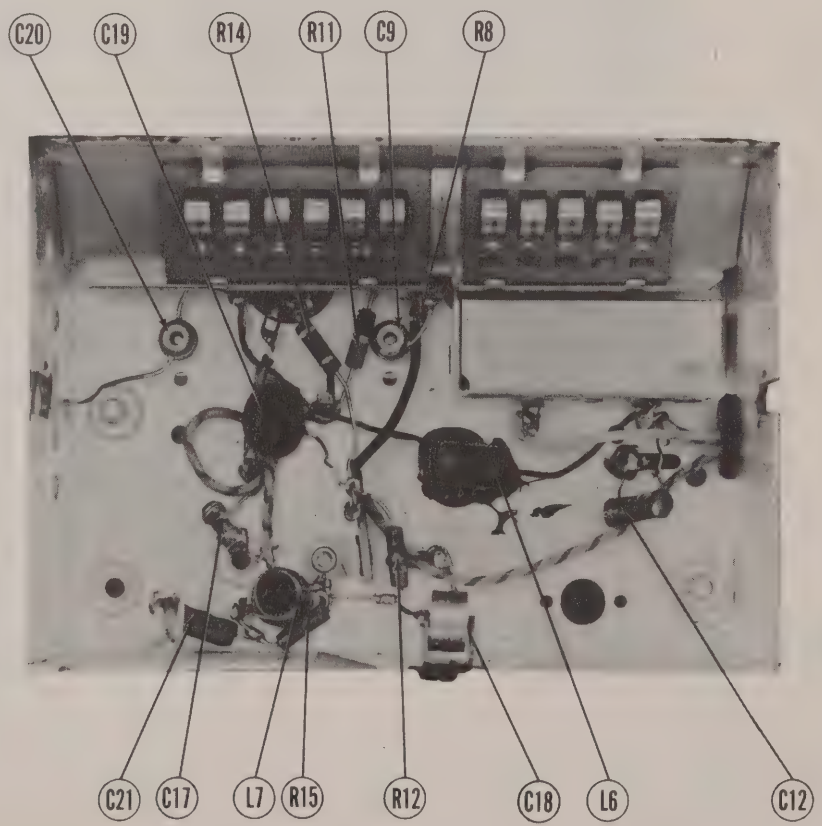
ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
† MEASURED FROM PIN 8 OF V22
# MEASURED FROM PINS 1 AND 8 OF V18

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.

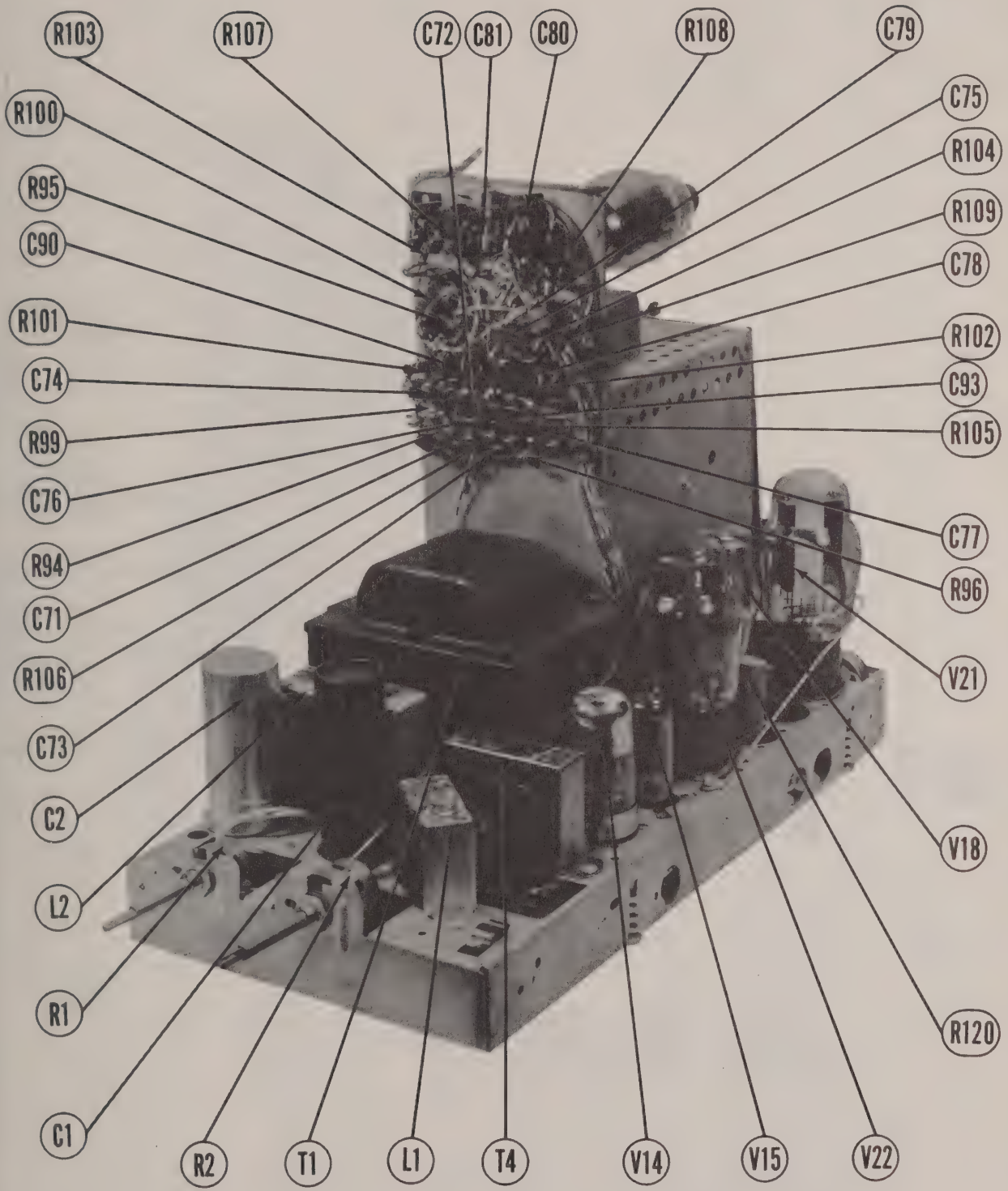
RF-IF CHASSIS-BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



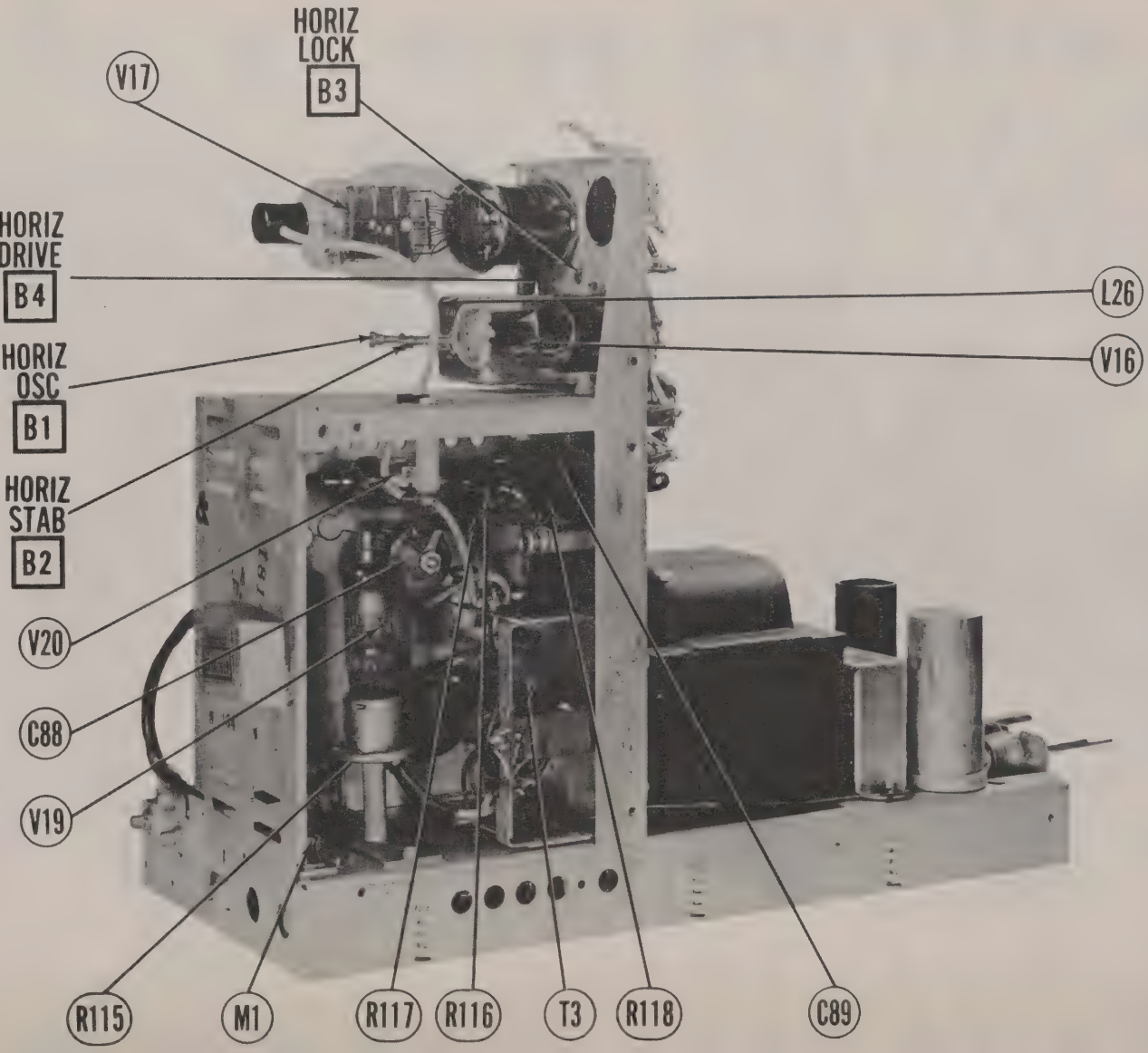
RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



SWEEP CHASSIS-TOP VIEW



SWEEP CHASSIS - TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		PHILCO PART No.	STANDARD REPLACEMENT		
V1A	RF Amplifier	6BC5	6BC5	7BD	
B	RF Amplifier	6CB6	6CB6	7CM	
V2A	Converter	6J6	6J6	7BF	
B	Converter	12AV7	12AV7	9A	
V3	1st Video IF Amp.	6AU6	6AU6	7BK	
V4	2nd Video IF Amp.	6AU6	6AU6	7BK	
V5	3rd Video IF Amp.	6AU6	6AU6	7BK	
V6	4th Video IF Amp.	6CB6	6CB6	7CM	
V7	Video Detector - AGC Rectifier - 1st Sound IF Amp.	12AU7	12AU7	9A	
V8	Video Amplifier - 1st Sync. Sep.	12AV7	12AV7	9A	
V9	Video Output	6AQ5	6AQ5	7BZ	
V10	2nd Sound IF Amp.	6AU6	6AU6	7BK	
V11	Ratio Detector - AF Amplifier	6T8	6T8	9E	
V12	Audio Output	7C5	7C5	6AA	
V13	2nd Sync. Sep. - Noise Limiter	12AU7	12AU7	9A	
V14	Sync. Phase Inv. - Vert. Oscillator - Vert. Discharge	7N7	7N7	8AC	
V15	Vertical Output	6S4	6S4	9AC	
V16	Horiz. AFC - Horiz. Oscillator	6SN7GT	6SN7GT	8BD	
V17	Horiz. Output	6CD6G	6CD6G	5BT	
V18	Damper	6BY5G	6BY5G	6CN	
V19	HV Rectifier	1X2	1X2	7CB	
V20	HV Rectifier	1X2	1X2	7CB	
V21	LV Rectifier	5U4G	5U4G	5T	
V22	LV Rectifier	5U4G	5U4G	5T	
V23	Picture Tube	16WP4A	16WP4A	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1	40	450	30-2568-5	AFH8J		UPT-4045T		TVL-1725	Filter
C2A	10	475	30-2570-62						▲ Vert. Output Decoupling
B	50	450							■ Filter
C	30	450							▲ Filter
D	30	25							Vert. Output Cathode
C3	10	25	30-2417-8	PRS25/10		BR102A		TVA-1204	Bias Filter
C4	10	475		PRS500/10		BR850A		TVA-1802	Vert. Osc. Decoupling †
C5A	20	450	30-2570-65	AF407		UPT2111145		TVL-4766	▲ Decoupling
B	10	450							■ Video Output Screen
C	10	450							▲ Audio Output Screen
D	10	450							Decoupling
C6	35	450	30-2570-25	AFH144		UPT4045		TVL-1725	Filter
C7	2	50	30-2417-7	E26E6		BBR2-50T		TVA-1301	Stabilizing Cap
C8	3-9								Variable Trimmer
C9	.5-3		45-1696						Variable Trimmer
C10	120		30-1224-69	SI120	D6-121		GP2K-121	19C29	RF Amp. Decoupling
C11	1000		62-210001011	SI1000	D6-102		GP2L-102	19C1	RF Amp. Fil.
C12	100		30-1224-1	SI100	D6-101		GP1K-101	19C11	Fil. Bypass
C13	100		30-1224-1	SI100N750	TCN-100		N750L-101		RF Coupling
C14	.5-3		45-1696						Variable Trimmer
C15	20		30-1224-43	SI20NPO	TCZ-20		NPOK-200		Osc. Grid Cap
C16	10		30-1224-51	SI10NPO	TCZ-10		NPOK-100	19C3	Fixed Trimmer
C17	10		30-1224-51	SI10NPO	TCZ-10		NPOK-100	19C3	Fixed Trimmer
C18	1000		62-210001011	BPD-005	DD-502		811-005	29C1	Mixer Plate Decoupling
C19A	1000		62-210001011	BPD-2X001	DD-2-102		812-001	29C7	Conv. Fil.
B	1000		62-210001011						RF Bypass
C20	.5-3		45-1697						Variable Trimmer
C21	120	500	30-1224-69	SI120	D6-121		GP2K-121	19C29	IF Coupling
C22	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-152	29C8	AGC Filter
C23	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-152	29C8	1st Video IF Decoupling
C24	39		62-03940901l	SI39	D6-390	5R5Q4	GP1K-390	MS-44	Fixed Trimmer
C25	100		62-110009001	SI100	D6-101	5W5T1	GP1K-101	19C11	IF Coupling
C26	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-152	29C8	AGC Filter
C27	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-152	29C8	2nd Video IF Decoupling
C28	22		62-022009001		TCZ-22			29C12	Fixed Trimmer
C29	33		62-033009001	SI33	D6-330	5W5Q4	GP1K-330	19C24	IF Coupling
C30	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-152	29C8	AGC Filter
C31	.47	200		P288-47		GT2P5		2TM-P47	AGC Filter †
C32	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-152	29C8	3rd Video IF Decoupling
C33	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-152	29C8	4th Video IF Screen
C34	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-152	29C8	4th Video IF Cathode
C35	470		62-147001001	SI470	D6-471	5W5T5	GP2L-471	19C15	IF Coupling
C36	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-152	29C8	RF Bypass
C37	56		62-056409001	SI56	D6-560	5W5Q5	GP1K-560	19C28	AGC Rect. Plate
C38	8			SI5			GP1K-050		Diode Load Filter *
C39	.22	200	45-3505-49	P488-22		GT4P25		2TM-P22	AGC Filter
C40	.1	200	45-3505-47	P288-1	DF-104	PTE4P1		2TM-P1	AGC Filter
C41	.047	200	45-3505-62	P288-047	DF-503	PTE4S5		2TM-S47	Video Coupling
C42	68		62-068409011	SI68	D6-680	5W5Q7	GP1K-680	19C10	Fixed Trimmer
C43	220		30-1224-20	SI220	D6-221	5W5T2	GP2K-221	19C13	Video Coupling
C44	.22	400	45-3505-48	P488-22		GT4P25		4TM-P22	Video Coupling
C45	56		62-056409001	SI56	D6-560	5W5Q5	GP1K-560	19C28	Video Output Cathode
C46	.047	400	45-3505-62	P488-047	DF-503	PTE4S5		4TM-S47	Video Coupling
C47	.47	400	45-3500-4	684-5		GT4P5		4TM-P5	Picture Tube Cathode
C48	56		62-056409001	SI56	D6-560	5W5Q5	GP1K-560	19C28	Sound IF Coupling
C49	.01	400	45-3505-58	P488-01	D6-103	PTE4S1	821-01	4TM-S1	1st Sound IF Decoupling
C50	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-152	29C8	Sound IF Coupling
C51	.0033	400	45-3505-55	P488-0033	D6-332	PTE6D3	GP2-333-332	6TM-D3	2nd Sound IF Decoupling
C52	330		60-10335407	SI330	D6-331	5W5T3	GP2K-331	19C14	RF Bypass
C53	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-152	29C8	RF Bypass

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C54	.0022	400	45-3505-54	P488-222	D6-222	PTE6D2	GP2-333-222	6TM-D22	De-emphasis
C55	.01	400	45-3505-58	P488-81	D6-103	PTE4S1	821-01	4TM-S1	Audio Coupling
C56	.0068	400	45-3505-40	P488-6S68	D6-682		GP2-333-682	6TM-D68	Tone Comp.
C57	10000	500	45-3505-58	1467-01	D6-103	1D3S1	GP2-333-103	1FM-11	Audio Coupling
C58	.0068	400	45-3505-40	P488-6S68	D6-682		GP2-333-682	6TM-D68	Audio Coupling
C59	.015	600	45-3509-59	P488-015		PTE6S15		6TM-S15	Audio Output Plate
C60	.022	400	45-3505-60	P488-223	DF-203	PTE6S2		4TM-S22	Sync. Coupling
C61	180	500		1469-0005	D6-181	5R5T2	GP2K-181	18S-T2	Sync. Coupling ††
C62	.015	200	45-3506-59	P488-015		PTE6S15		6TM-S15	Sync. Coupling
C63	.047	400	45-3505-62	P488-047	DF-503	PTE4S5		4TM-S47	Sync. Coupling
C64	.01	400	45-3505-58	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Vert. Sync. Coupling
C65	.0047	600	45-3505-56	P488-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Integrator Net
C66	.022	200	45-3505-43	P488-223	DF-203	PTE4S2		4TM-S22	Integrator Net
C67	.047	400	45-3505-62	P488-047	DF-503	PTE4S5		4TM-S47	Vert. Discharge
C68	.047	400	45-3505-62	P488-047	DF-503	PTE4S5		4TM-S47	Vert. Sweep Coupling
C69	.015	400	45-3505-59	P488-015		PTE6S15		6TM-S15	Vert. Output Plate
C70	120	500		1469-0004	D6-121	5W5T1	GP2K-121	1FM-S1	Horiz. Sync. Coupling ††
C71	.0022	400	45-3505-54	P488-0022	D6-222	PTE6D2	GP2-333-222	6TM-D22	Horiz. Sync. Coupling
C72	15	200	45-3505-48	P288-15				2TM-P15	AFC Filter
C73	.022	200	45-3505-43	P488-223	DF-203	PTE4S2		4TM-S22	AFC Filter
C74	180	1000	30-1244-5	1469-0004	D6-103	1D3-S1	GP2-333-103	1FM-11	Horiz. Osc. Grid
C75	10000	500	60-30103404	1467-01	D6-103	1D3-S1	GP2-333-103	1FM-11	Fixed Trimmer
C76	150	500	60-10155407	1468-00015	D6-151	5W5T15	GP2K-151	1FM-S15	Voltage Divider
C77	10	1000	30-1244						Horiz. Feedback
C78	1200	500	60-10125404	1464-001		1R5D5		1RS-D	Horiz. Discharge
C79	220	500	60-12204166	1469-00025	D6-221	5R5T25	GP2K-221	1FM-325	Horiz. Sweep. Coupling
C80	33	1000	60-00305307						Horiz. Feedback
C81	.047	400	45-3505-62	P488-047	DF-503	PTE4S5		4TM-S47	Horiz. Output Screen
C82	.15	400	45-3505-48	P488-15				4TM-P15	Damper Filter
C83	.0047	600	45-3505-56	P688-0047	DF-472	PTE6D5	GP2-333-472	6TM-D47	Fixed Trimmer
C84	.47	200	45-3505-34	P288-47		GT2P5		2TM-P47	Horiz. Sweep Coupling
C85	.033	200	45-3501-61	P488-033					Damper Filter
C86	.1	200	45-3505-47	P288-1	DF-104	PTE4P1		2TM-P1	Damper Filter
C87	.1	200	45-3505-47	P288-1	DF-104	PTE4P1		2TM-P1	Damper Filter ♦
C88	500	20000	30-1229-4	HV20C	TV3-502				Voltage Divider
C89	500	20000	30-1229-4	HV20C	TV3-502				HV Filter
C90	.047	400	45-3505-62	P488-047	DF-503	PTE4S5		4TM-S47	Horiz. AFC Plate
C91	.0033	400	45-3505-55	P488-0033	D6-332	PTE6D3	GP2-333-332	6TM-D3	Fixed Trimmer
C92	.1	400		P488-1	DF-104	PTE4P1		4TM-P1	Decoupling ♦
C93	.001	400		P688-001	D6-102	PTE6D1	GP2L-102	19C1	Horiz. Feedback ♦
C94	.0047	600	45-3505-56	P688-0047	DF-472	PTE6D5	GP2-333-472	6TM-D47	Fixed Trimmer ♦
C95	1500		83-71500001	SU500	D6-152	1W5D15	GP2L-152	29C8	RF Bypass ♦

† Some models use .1MFD Mfgrs. Part # 45-3505-47 in this application.
‡ Some models use .22MFD Mfgrs. Part # 45-3505-49 in this application.
* Some models use 5MMFD Mfgrs. Part # 30-1224-5 in this application.
♦ Not used in all models.
†† Some models use 120MMFD Mfgrs. Part # 60-10135237 in this application.
‡‡ Some models use 82MMFD Mfgrs. Part # 60-00825237 in this application.

CONTROLS

ITEM No	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PHILCO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	2 Meg	½	33-5564-10	Q18-139X	AT-116	BT-78-S	Volume Control - Tapped ⓐ 1Meg
B	Shaft		Not req.	Not req.	FS-3	Not req.	Attach to R1A Per Instructions
C	Switch		Not req.	76-1	SW-A	Not req.	Attach to R1A Per Instructions
R2A	75KΩ	½	33-5563-26		RTV-241	SBB-851	Horizontal Hold Control - Front
B	250KΩ	½					Vertical Hold Control - Rear
R3A	2500Ω	2	33-5563-27		RTV-242		Contrast Control - Wire Wound - Front
B	100KΩ	½					Brightness Control - Rear
R4A	2.5Meg	½	33-5565-10	Q11-239	AM-84-S	AN-83	Height Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R4A Per Instructions
R5	5000Ω	2	33-5566-10	W-5000 ♦	43-5000 ♦	YK-135	Vertical Linearity Control - Wire Wound

♦ Fashion shaft to duplicate original.

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PHILCO PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHER WISE SPECIFIED
R6	3900Ω	½	66-2398340	BTS-3900	Antenna Coil Shunt
R7	47KΩ 20%	½	66-3478340	BTS-47K	AGC Network
R8	2200Ω 20%	½	66-2228340	BTS-2200	Decoupling
R9	10KΩ 20%	½	66-3108340	BTS-10K	RF Coil Shunt
R10	4700Ω 20%	½	66-3478340	BTS-4700	Mixer Grid
R11	220KΩ 20%	½	66-4228340	BTS-220K	Mixer Grid
R12	10KΩ	½	66-3108340	BTS-10K	Mixer Plate Decoupling - See Note 2
R13	10KΩ	½	66-3108340	BTS-10K	Oscillator Grid
R14	4700Ω	½	66-3478340	BTS-4700	Oscillator Plate
R15	15KΩ 20%	½	66-3158340	BTS-15K	1st Video IF Transformer Shunt
R16	15KΩ	½	66-3158340	BTS-15K	1st Video IF Amp. Grid
R17	68Ω	½	66-0688340		1st Video IF Amp. Cathode
R18	330Ω	½	66-1338340	BTS-330	1st Video IF Amp. Decoupling
R19	330Ω	½	66-1338340	BTS-330	AGC Network
R20	330Ω	½	66-1338340	BTS-330	AGC Network
R21	12KΩ	½	66-3128340	BTS-12K	2nd Video IF Amp. Grid
R22	68Ω	½	66-0688340		2nd Video IF Amp. Cathode
R23	330Ω	½	66-1338340	BTS-330	Decoupling
R24	33KΩ	½	66-3338340		3rd Video IF Transformer Shunt
R25	12KΩ	½	66-3128340	BTS-12K	3rd Video IF Amp. Grid
R26	68Ω	½	66-0688340		3rd Video IF Amp. Cathode
R27	82000Ω	½	66-2828340		4th Video IF Transformer Shunt
R28	180Ω	½	66-1188340	BTS-180	4th Video IF Amp. Cathode - See Note 3
R29	330Ω	½	66-1338340	BTS-330	4th Video IF Amp. Screen
R30	6800Ω	1	66-2688340	BTA-6800	4th Video IF Amp. Plate
R31	330KΩ	½	66-4338340	BTS-330K	AGC Load
R32	100KΩ	½	66-4108340	BTS-100K	AGC Network
R33	3300Ω	½	66-2338340	BTS-3300	Video Det. Diode Load
R34	330Ω	½	66-1338340	BTS-330	Isolation
R35	1000Ω	½	66-2108340	BTS-1000	Voltage Divider
R36	150KΩ	½	66-4158340	BTS-150K	Voltage Divider
R37	4.7Meg 20%	½	66-5478340	BTS-4.7Meg	Bias Network
R38	1.2Meg 20%	½	66-5128340	BTS-1.2Meg	Video Amp. Grid

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PHILCO PART No.	IRC PART No.	IDENTIFICATION CODES
R39	3900Ω	½	66-2398340	BTS-3900	Video Amp. Plate
R40	2700Ω	½	66-2728340	BTS-2700	Video Amp. Plate
R41	3900Ω	½	66-2398340	BTS-3900	Video Peaking Coil Shunt
R42	5600Ω	1	66-2568340	BTA-5600	Decoupling
R43	2 Meg 5%	½			Bias Network - See Note 4
R44	1.2Meg 20%	½	66-5128340	BTS-1.2Meg	Video Output Grid
R45	10KΩ	½	66-3108340	BTS-10K	Video Output Screen
R46	1800Ω	3	66-2184340	BTB-1800	Video Output Plate - See Note 13
R47	100KΩ	½	66-4108340	BTS-100K	Voltage Divider
R48	1300Ω	10	33-3435-31	1 3/4A-1250	Decoupling - Wire Wound
R49	47KΩ	½	66-4478340	BTS-47K	Picture Tube Grid
R50	150KΩ	½	66-4158340	BTS-150K	Picture Tube Cathode
R51	120KΩ	½	66-4128340	BTS-120K	1st Sound IF Amp. Grid
R52	150Ω	½	66-1158340	BTS-150	1st Sound IF Amp. Cathode
R53	1000Ω	½	66-2108340	BTS-1000	1st Sound IF Amp. Plate Decoupling
R54	680KΩ	½	66-4688340	BTS-680K	2nd Sound IF Amp. Grid
R55	12KΩ	1	66-3124340	BTA-12K	2nd Sound IF Amp. Decoupling
R56	22KΩ	½	66-3228340	BTS-22K	Voltage Divider
R57	270Ω	½	66-1278340	BTS-270	Balancing
R58	22KΩ	½	66-3228340	BTS-22K	De-emphasis
R59	33KΩ	½	66-3338340	BTS-33K	AVC Network
R60	10Meg	½	66-6108340	BTS-10Meg	AF Amp. Grid
R61	270KΩ	½	66-4278340	BTS-270K	AF Amp. Plate
R62	470KΩ	½	66-4478340	BTS-470K	Output Grid
R63	270Ω	1	66-1274340	BW-1-270	Output Cathode - Wire Wound
R64	10KΩ	½	66-3108340	BTS-10K	Decoupling
R65	220Ω	½	66-1228340	BTS-220	Feedback Network
R66	27Ω	½	66-0273340	BW-½-27	Feedback Network - Wire Wound
R67	8200Ω	½	66-2828340	BTS-8200	Tone Compensation
R68	1.2Meg 20%	½	66-5128340	BTS-1.2Meg	1st Sync. Sep. Grid
R69	10KΩ	½	66-3108340	BTS-10K	1st Sync. Sep. Cathode
R70	270KΩ	½	66-4278340	BTS-270K	2nd Sync. Sep. Grid
R71	100KΩ	½	66-4108340	BTS-100K	2nd Sync. Sep. Plate
R72	15KΩ	½	66-3158340	BTS-15K	Voltage Divider
R73	6.8Meg	½	66-5688340	BTS-6.8 Meg	Voltage Divider
R74	240KΩ 5%	½	66-4228340		Voltage Divider
R75	56KΩ 5%	½	66-3568340	BTS-56K-5%	Noise Limiter Load
R76	47KΩ	½	66-3478340	BTS-47K	Series Test Jack
R77	10KΩ	½	66-3108340	BTS-10K	Sync. Phase Inv. Grid
R78	1Meg	½	66-5108340	BTS-1Meg	Sync. Phase Inv. Grid
R79	15KΩ	2	66-3155340	BTS-15K	Sync. Phase Inv. Plate
R80	22KΩ	2	66-3225340	BTB-22K	Sync. Phase Inv. Plate Decoupling - See Note 1
R81	5100Ω 5%	½			Voltage Divider - See Note 5
R82	10KΩ	½	66-3108340	BTS-10K	Integrator
R83	5100Ω 5%	½			Integrator - See Note 5
R84	4700Ω	½	66-2478340	BTS-4700	Integrator
R85	270KΩ	½	66-4278340	BTS-270K	Vertical Osc. Grid - See Note 6
R86	68KΩ	½	66-4688340	BTS-680K	Vertical Oscillator Plate
R87	56KΩ	½	66-4568340	BTS-560K	Vertical Oscillator Plate Decoupling See Note 1
R88	15KΩ	½	66-3158340	BTS-15K	Vertical Oscillator Transformer Shunt
R89	8200Ω	½	66-2828340	BTS-8200	Vertical Peaking - See Note 7
R90	2.2Meg	½	66-5228340	BTS-2.2Meg	Vertical Output Grid
R91	470Ω	1	66-1474340	BTA-470	Vertical Output Cathode
R92	5100Ω	5	33-1335-18	1 3/4A-5000	Vertical Output Decoupling - See Note 8
R93	100KΩ 20%	½	66-4108340	BTS-100K	Damping
R94	820KΩ	1	66-4824240	BTA-820K	Horizontal AFC Grid - See Note 13
R95	470KΩ	½	66-4478340	BTS-470K	Horizontal AFC Cathode
R96	8200Ω	½	66-2828340	BTS-8200	Horizontal AFC Filter
R97	82KΩ	1	66-3824340	BTA-82K	Horizontal AFC Plate - See Note 9
R98	47KΩ	½	66-3478340	BTS-47K	Voltage Divider - See Note 10
R99	270KΩ	½	66-4278340	BTS-270K	Voltage Divider - See Note 13
R100	3.3Meg 5%	1	66-5334240	BTA-3.3Meg-5%	Voltage Divider
R101	680KΩ 20%	1		BTA-680K	Horizontal Osc. Grid - See Note 11
R102	33KΩ	1	66-3334340	BTA-33K	Horizontal Osc. Plate
R103	6800Ω	½	66-2688340	BTS-6800	Horizontal Osc. Coil Shunt
R104	22KΩ	½	66-3228340	BTS-22KΩ	Horizontal Osc. Coil Shunt
R105	220KΩ	½	66-4228340	BTS-220K	Horizontal Feedback Network
R106	22KΩ	½	66-3228340	BTS-22K	Horizontal Feedback Network
R107	1Meg 20%	1	66-5104340	BTA-1Meg	Horizontal Feedback Network
R108	100Ω 20%	½	66-1104340		Parasitic Suppressor
R109	470KΩ	½	66-4478340	BTS-470K	Horizontal Output Grid
R110	12KΩ	5	33-1335-103	1 3/4A-12K	Horizontal Output Screen - Wire Wound
R111	47Ω	½	66-1478340	BTS-470	Anti-Ringing Coil Shunt - See Note 13
R112	390Ω	½	66-1398340	BTS-390	Centering Network
R113	18KΩ	2		BTB-18K	Decoupling - See Note 12
R114	27KΩ	1		BTA-27K	Horizontal Output Screen - Wire Wound - See Note 1
R115	4.7Ω	½	66-9474360	BW-½-4.7	HV Rectifier Filament - Wire Wound
R116	4.7Ω	½	66-9474360	BW-½-4.7	HV Rectifier Filament - Wire Wound
R117	2 Meg	2	33-1346		HV Rectifier Load
R118	2Meg	2	33-1346		HV Rectifier Load
R119	Length of Wire		41-4025		Filament Dropping
R120	650Ω	10	33-3445-2		Filter - Wire Wound
R121	10KΩ	½	66-3108340	BTS-10K	Bias Network
R122	18KΩ	½	66-3188340	BTS-18K	Bias Network
R123	3.3Ω	½	66-9334360		Bias Network - See Note 1
R124	10Ω	½	66-0104340	BW-½-10	Series Pilot Light
R125	100KΩ	½	66-4108340	BTS-100K	AGC Network
R126	2200Ω 20%	½	66-2228340	BTS-2200	Contrast Control Shunt

Note 1. Not used in all models.
Note 2. Some models use 150Ω resistor in this application.
Note 3. Some models use 180Ω resistor in this application.
Note 4. Some models use 1.8 meg resistor in this application.
Note 5. Some models use 4700Ω resistor in this application.
Note 6. Some models use 180KΩ resistor in this application.
Note 7. Some models use 3300Ω resistor in this application.
Note 8. Some models use 4200Ω resistor in this application.
Note 9. Some models use 47KΩ resistor in this application.
Note 10. Some models use 33KΩ resistor in this application.
Note 11. Some models use 560KΩ resistor in this application.
Note 12. Some models use 4200Ω 5 watt resistor in this application.
Note 13. Some models use parallel resistors in this application to obtain desired value.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC ⓐ 2.4A	600VCT .325ADC	5VAC ⓐ 6A	6.3VAC ⓐ 1.2A SEC. 4 6.3VAC ⓐ 9A	32-8469 32-8429 ①		P-3068	

① Used in some models.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	170Ω	330Ω	32-8431				Vertical Block Osc. Trans
T3	82Ω	52Ω	32-8465-2		HV0-5		Horizontal Output Trans.
	Tap 24Ω	Tap 1.3Ω SEC. 2 0Ω SEC. 3 0Ω					
T4	760Ω	14Ω	32-8432 (or) 32-8454-1 ①	A-8112			Vertical Output Trans.
T5A	32Ω		32-9642	DY-7	MDF-70		Horizontal Deflection Coil
B	48Ω						Vertical Deflection Coil

① Used in some models.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T6	5.9KΩ	3.3Ω	480Ω	.7Ω	32-8242-9 32-8242-7 ①	A-3823	A-3019	R0-9 ②	① Used in some models. ② Drill one new mounting hole

SPEAKER

ITEM No.	RATINGS FIELD RES.	RATINGS V. C. IMP.	REPLACEMENT DATA PHILCO PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	PM	3.3Ω	36-1638-1 36-1640 ③	8"-108 Mod. P6-X	6A15	③ 10" PM - Used in Model 51-T1634 Only.
	CONE DIA.	V. C. DIA.				
SP2	5 15/16"	9/16"				

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.170A	68Ω	1.6 Henries	32-8430 (or) 32-8419-2 ①		C-2974		
L2	.320A	50Ω	2.3 Henries	32-8435 (or) 32-8478-2 ①				

① Used in some models.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA PHILCO PART No.	MEISSNER PART No.	NOTES
L3	Ant. Coil	0Ω	0Ω	32-4436-2		Channel 2
L4	Fil. Choke	0Ω	0Ω	45-6579		
L5	RF, Mixer Grid and Osc. Coil	0Ω		32-4437-2		Channel 2
L6	Fil. Choke	0Ω		45-6580		
L7	1st Video IF	1.2Ω	Tap .8Ω	45-1695		
L8	2nd Video IF	.3Ω		32-4486		
L9	Adj. Sound Trap	.1Ω		32-4303-3		
L10	3rd Video IF	.3Ω		32-4486		
L11	Adj. Sound Trap	.1Ω		32-4496		
L12	Fil. Choke	.1Ω		32-4112-15		
L13	4th Video IF	.2Ω	.2Ω	32-4486-6		
L14	RF Choke	.1Ω		32-4112-15		
L15	5th Video IF	.3Ω		32-4486		
L16	Fil. Choke	.1Ω		32-4112-15		
L17	Peaking	2.2Ω		32-4143-16		40 Microhenries (White Dot)
L18	Peaking	3.1Ω		32-4480-3	19-1920	100 Microhenries (Orange Dot)
L19	4.5MC Trap	1.8Ω		32-4463-5		
L20	Peaking	4.8Ω		32-4480-9	19-1921	180 Microhenries (White Dot)
L21	Peaking	4Ω		32-4480-8	19-1921	125 Microhenries
L22	Peaking	3.1Ω		32-4480-3	19-1920	100 Microhenries (Orange Dot)
L23	1st Sound IF	5.5Ω		32-4449A		
L24	Ratio Det. Trans.	5.5Ω 5.5Ω	.7Ω	32-4450		Tap 1.2Ω
L25	Fil. Choke	.1Ω		32-4112-15		
L26	Horiz. Osc.	50Ω	Tap 50Ω	32-4506		
L27	Ring Coil	4.2Ω		32-4480	12-1921	150 Microhenries (White Dot)
L28	Horiz. Width	.8Ω		32-4468-4		
L29	Horiz. Lin	1Ω	Tap 4Ω	32-4501		

PARTS LIST AND DESCRIPTIONS (Continued)

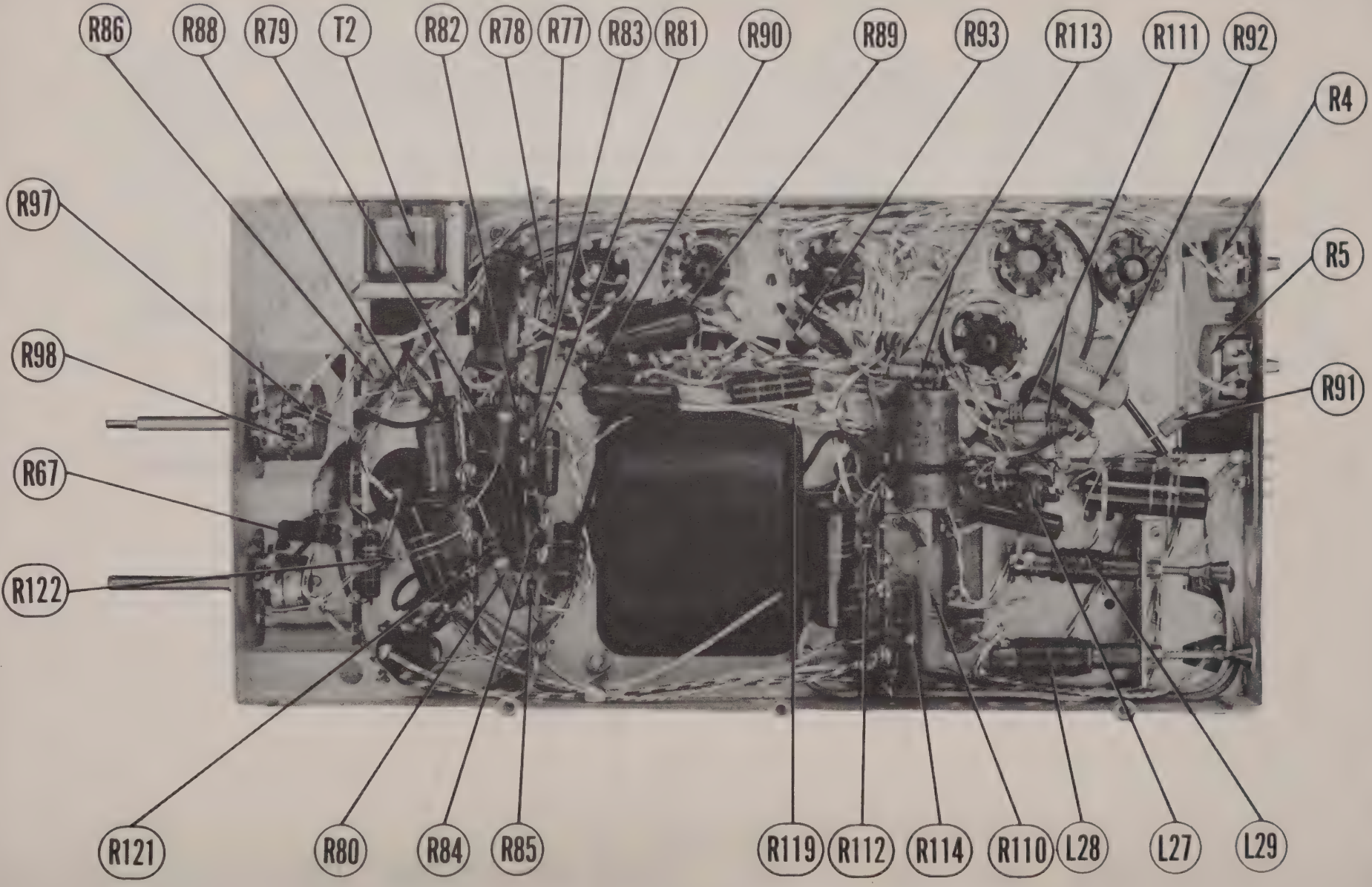
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			PHILCO PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1 M2	3AG Slo-Blo Copper Wire ④	6/10A	45-2656-18	76-4519-2	313.600	357001	④ 2 1/2" Length of #26 Copper Wire

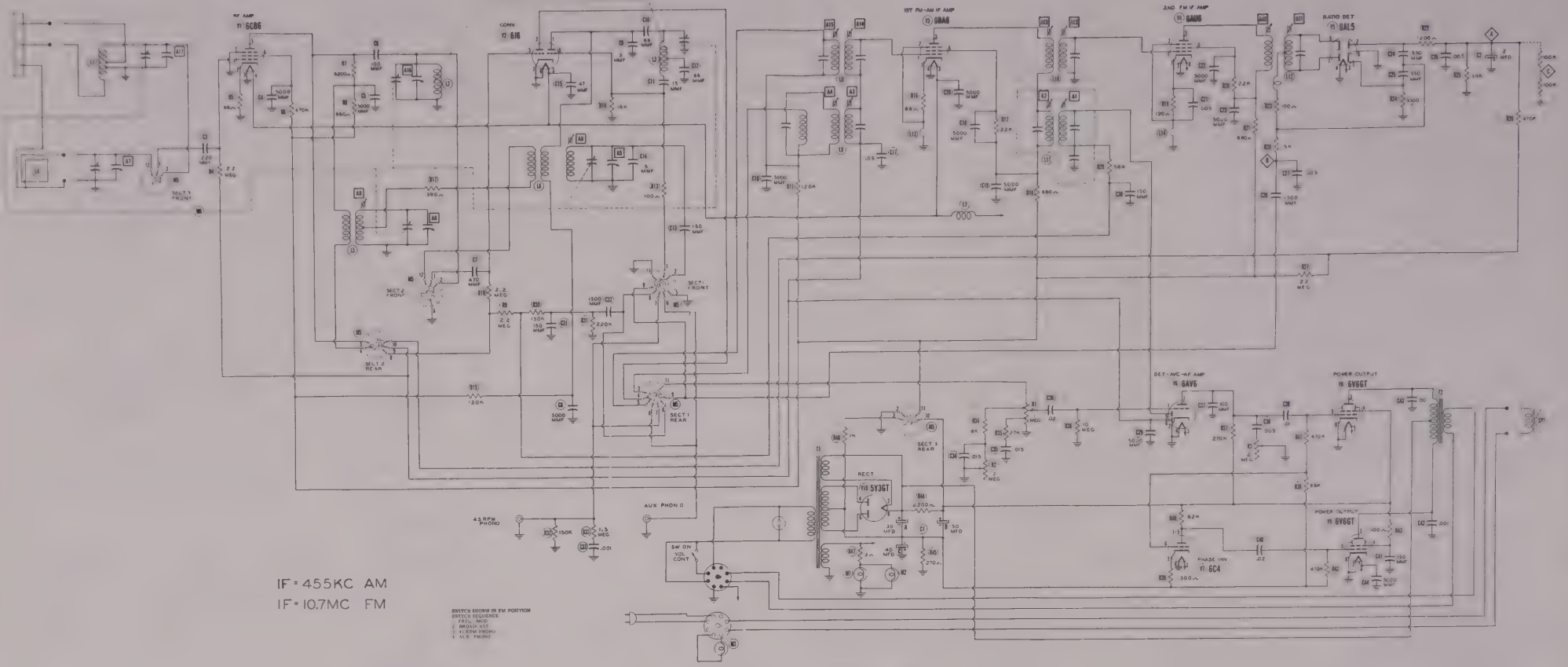
MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M3A	RF Tuner	76-5411-1	
B	RF Tuner	76-5747	
M4	Focus Magnet	76-5725	
M5	Ion Trap		
	Antenna Coil	32-4436-3	Channel 3
		32-4436-4	Channel 4
		32-4436-5	Channel 5
		32-4436-6	Channel 6
		32-4436-7	Channel 7
		32-4436-8	Channel 8
		32-4436-9	Channel 9
		32-4436-10	Channel 10
		32-4436-11	Channel 11
		32-4436-12	Channel 12
		32-4436-13	Channel 13
	RF, Mixer Grid and Osc. Coil	32-4437-3	Channel 3
		32-4437-4	Channel 4
		32-4437-5	Channel 5
		32-4437-6	Channel 6
		32-4437-7	Channel 7
		32-4437-8	Channel 8
		32-4437-9	Channel 9
		32-4437-10	Channel 10
		32-4437-11	Channel 11
		32-4437-12	Channel 12
		32-4437-13	Channel 13
	Knob	54-4750	Antenna Tuning
	Knob	54-4699-5	Brightness (Model 51-T1601 Code 121 and 122)
	Knob	54-4799-1	Brightness (Model 51-T1602 Code 121 and 122 , 51-T1634 Code 123 and 124)
	Knob	56-7807-1	Channel Selector (Model 51-T1601 Code 121 and 122)
	Knob	76-6175	Channel Selector (Model 51-T1602 Codes 121, 122, 51-T634 Codes 123 and 124)
	Knob	54-4707-2	Contrast (Model 51-T1601 Code 121, 122)
	Knob	54-4769	Contrast (Models 51-T1602, Codes 121, 122, 51-T1634, Code 123 and 124)
	Knob	54-4803	Fine Tuning (Model 51-T1601 Code 121)
	Knob	54-4701-1	Fine Tuning (Model 51-T1601 Code 122)
	Knob	76-6104	Fine Tuning (Model 51-T1602, Code 121, 51-T1634 Code 122)
	Knob	76-6104-3	Fine Tuning (Models 51-T1602, Code 122, 51-T1634, Code 124)
	Knob	54-4707-2	Horiz. Hold (Model 51-T1601, Codes 121 and 122)
	Knob	54-4769	Horiz. Hold (Models 51-T1602 Codes 121 and 122, 51-T1634, Codes 123 and 124.
	Knob	54-4699-5	Vert. Hold (Model 51-T1601, Codes 121, 122)
	Knob	54-4709-1	Vert. Hold (Models 51-T1602, Codes 121, 122, 51-T1634, Codes 123, 124)
	Knob	54-4804-1	Volume (Model 51-T1601 , Codes 121, 122)
	Knob	76-6166	Volume (Models 51-T1602 Codes 121, 122, 51-T1634, Codes 123,124)
A 11	Trimmer	31-6473-18	(45-370MMF) Balancing
B3	Trimmer	31-6473-22	(45-370MMF) Lock-In
B4	Trimmer	31-6473-22	(45-370MMF) Drive

SWEEP CHASSIS-CAPACITOR IDENTIFICATION



SWEEP CHASSIS-RESISTOR IDENTIFICATION



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V1	6CB6	5VDC +215VDC	3VDC +45VDC	0V	6.3VAC	+135VDC *100VDC	+210VDC *160VDC	0V	
V2	6J6	+22VDC	*80VDC	6.3VAC	0V	- .6VDC	+170VDC M*-2 VDC	0V	
V3	6BA6	3VDC	0V	6.3VAC	0V	210VDC	+170VDC *140VDC	63V	
V4	6AU6	0V	0V	0V	6.3VAC	180VDC	112VDC	1.5VDC	
V5	6AL5	-1VDC	- .3VDC	6.3VAC	0V	- .2VDC	0V	- .1VDC	
V6	6AV6	-1VDC	0V	6.3VAC	0V	- .1VDC	- .3VDC	2.2VDC	
V7	6C4	89VDC	0V	6.3VAC	0V	89VDC	-13VDC	-11VDC	
V8	6V6GT	0V	0V	250VDC	250VDC	-40VDC	-45VDC	6.3VAC	0V
V9	6V6GT	0V	0V	250VDC	250VDC	-20VDC	-15VDC	6.3VAC	0V
V10	5Y3GT	0V	250VDC	0V	250VAC	0V	250VAC	0V	250VDC

▲ MEASUREMENTS TAKEN IN AM POSITION
* MEASUREMENTS TAKEN IN FM POSITION
† MEASURED WITH VTVM

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V1	6CB6	56meg	680Ω	0Ω	0Ω	0Ω	1+350KΩ *135KΩ	1+170KΩ	∞Ω
V2	6J6	820KΩ +2.5MEG	710KΩ	0Ω	0Ω	56meg	180Ω	∞	
V3	6BA6	+350KΩ	0Ω	22Ω	0Ω	120KΩ	+135KΩ	680Ω	
V4	6AU6	0Ω	0Ω	0Ω	0Ω	135KΩ	820KΩ	220Ω	
V5	6AL5	330KΩ	68KΩ	0Ω	33Ω	0ΩL	0Ω	0ΩL	
V6	6AV6	.5MEG	0Ω	22Ω	0Ω	470KΩ	1+2.5MEG *1.5MEG	127.5KΩ	
V7	6C4	110KΩ	1ΩL	0Ω	0Ω	110KΩ	68KΩ	250Ω	
V8	6V6GT	0Ω	0Ω	135Ω	135Ω	168Ω	270Ω	22Ω	
V9	6V6GT	0Ω	0Ω	135Ω	135Ω	168Ω	270Ω	22Ω	
V10	5Y3GT	∞	90KΩ	1ΩL	330Ω	2ΩL	330Ω	1ΩL	90KΩ

† MEASURED FROM PIN 8 OF V10

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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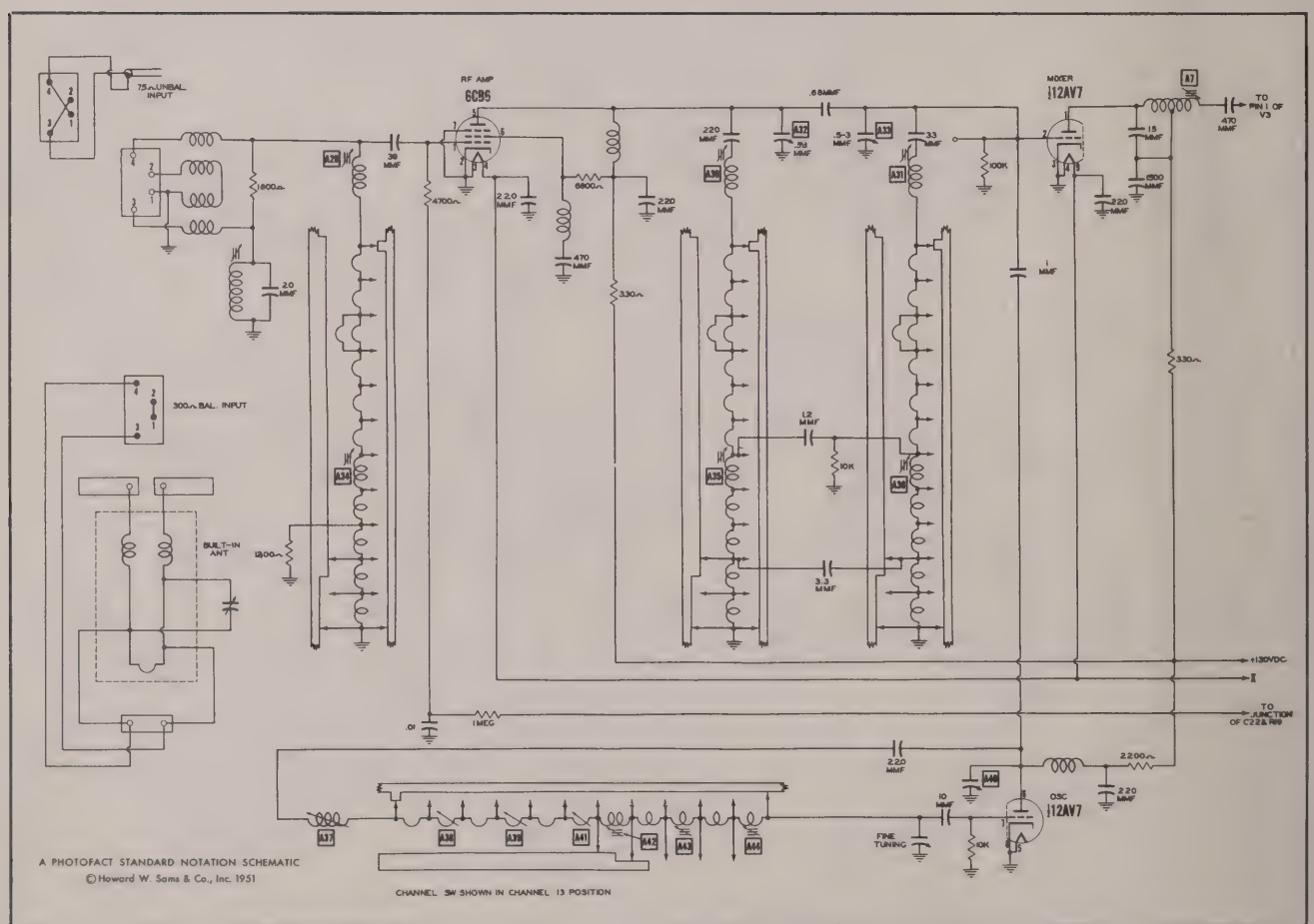
DISASSEMBLY INSTRUCTIONS

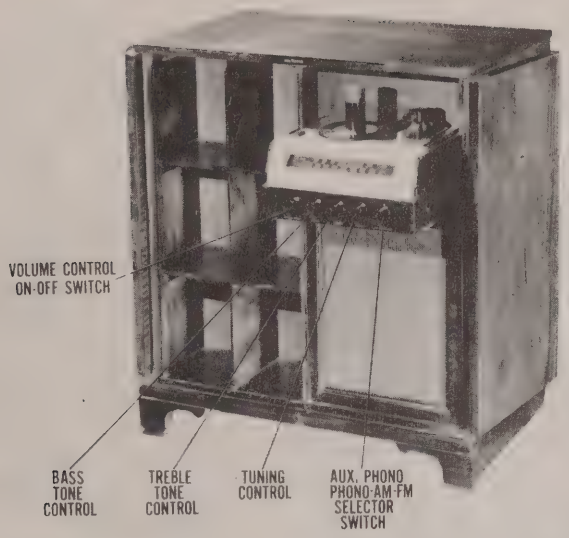
1. Remove seven push-on type control knobs.
2. Remove twelve hex head screws from rear cover. Remove rear cover.
3. Disconnect built-in antenna.
4. Disconnect speaker.
5. Disconnect receiver chassis power plug.
6. Disconnect volume control plug.
7. Disconnect yoke plug.
8. Disconnect picture tube plug.
9. Disconnect HV lead.
10. Remove four 1/4" hex head bolts from receiver chassis. Remove chassis.
11. Remove five 1/4" hex head bolts from Rectifier chassis. Remove chassis.
12. Remove four 5/16" hex nuts from speaker. Remove speaker.

NOTE: FOR PICTURE TUBE REMOVAL, IT IS NECESSARY TO REMOVE THE CHASSIS AS OUTLINED ABOVE.



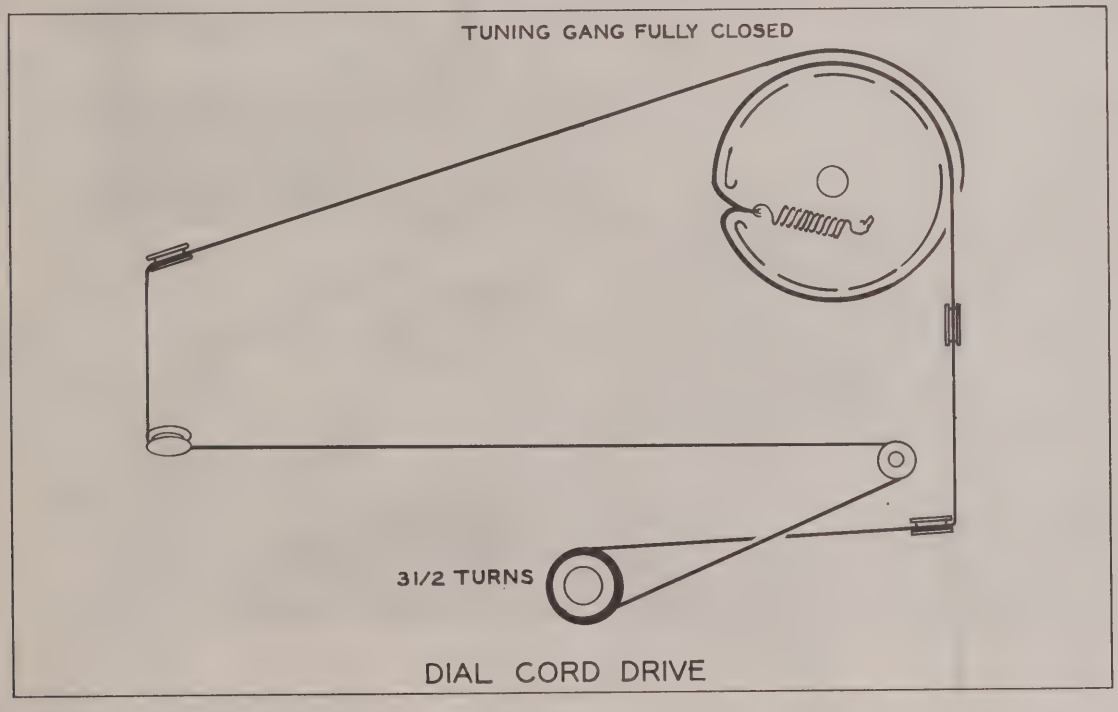
ALTERNATE TUNER SCHEMATIC

RCA VICTOR
MODEL 45-W-10 (Ch. RC1096A)



TRADE NAME	RCA Victor, Model 45-W-10 (Ch. RC1096A)		
MANUFACTURER	RCA Victor, Div. of Radio Corp. of America, Camden, New Jersey		
TYPE SET	AC Operated Combination Phono-Radio, AM-FM Superheterodyne Receiver With Loop Antenna		
TUBES (TEN)	Types 6CB6 RF Amp., 6J6 Conveter, 6BA6 1st IF Amp., 6AU6 2nd FM IF Amp., 6AL5 Ratio Det., 6AV6 Det.-AVC-AF, 6C4 Phase Inverter, (2) 6V6GT Power Output, 5Y3GT Rectifier		
POWER SUPPLY	110-120 Volts AC	RATING	.725 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1600KC	FREQ. MOD.	88-108MC

RECORD CHANGER -- RCA MODEL RP-190



HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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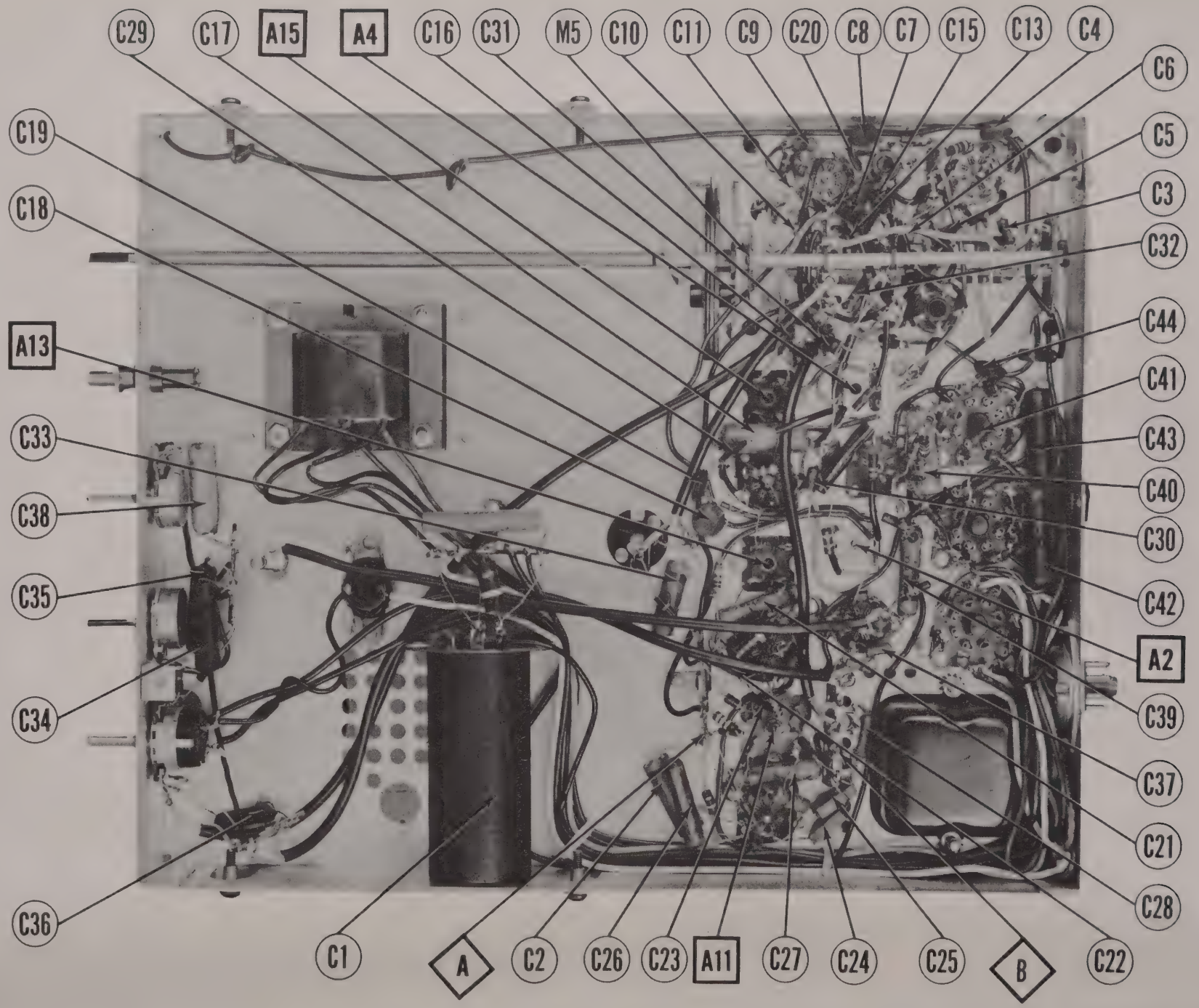
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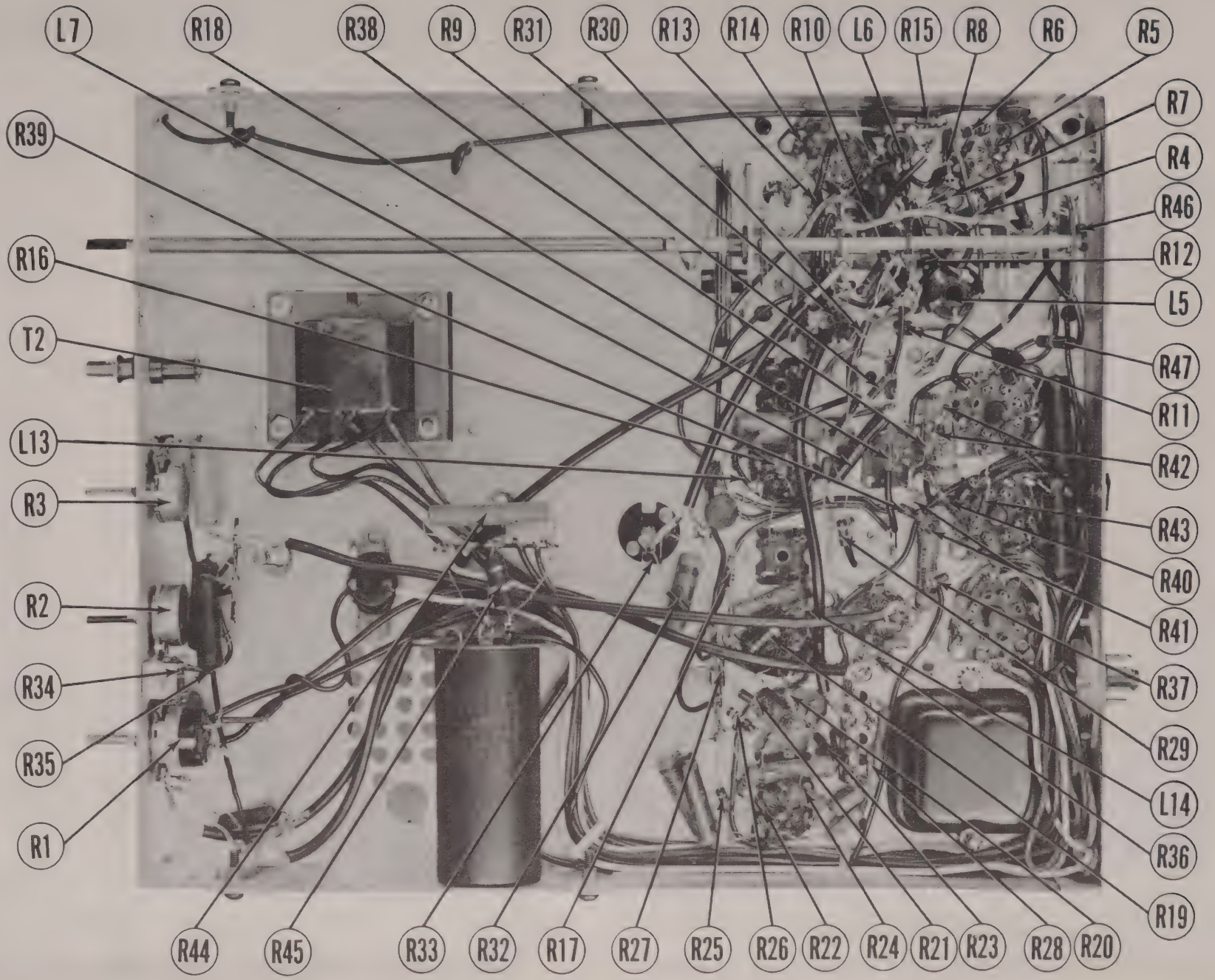
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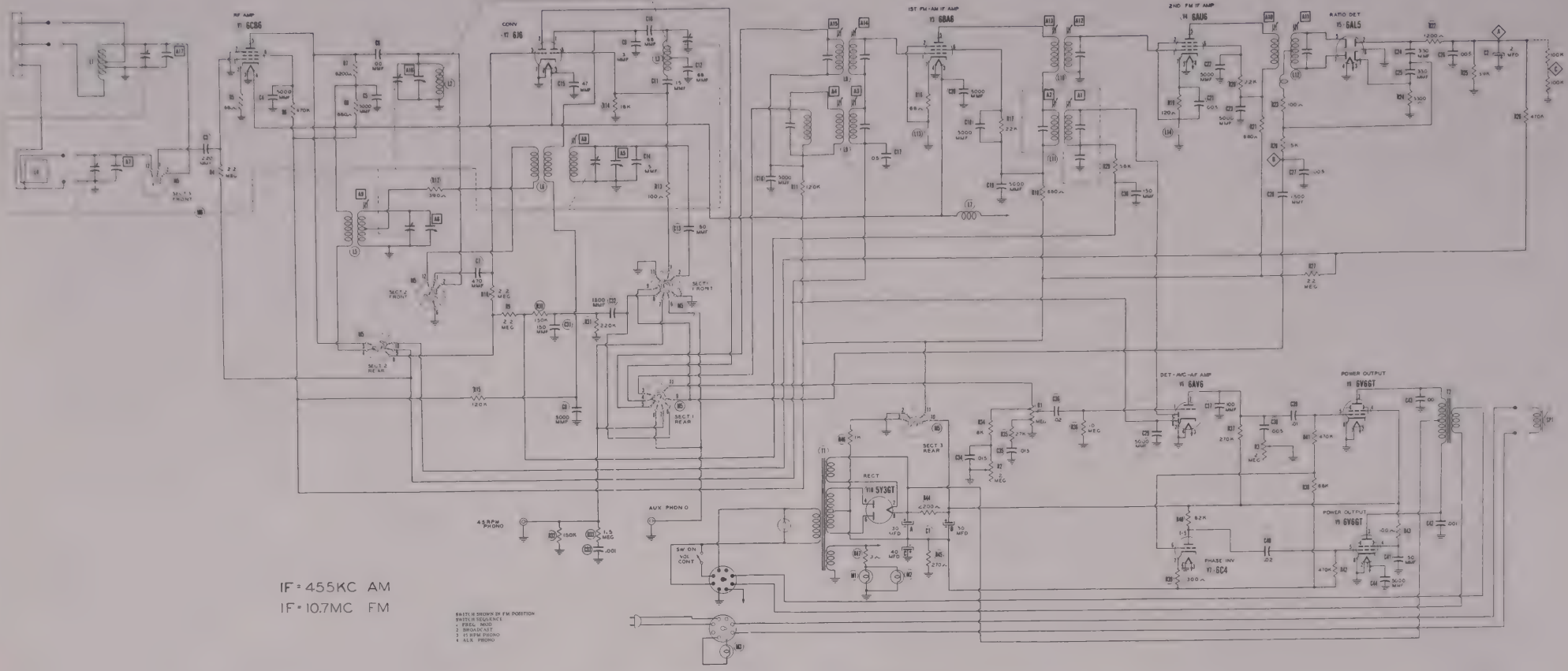

* MEASUREMENTS TAKEN IN AM POSITION
* MEASUREMENTS TAKEN IN FM POSITION

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6CB6	1VDC *115VDC	1VDC *115VDC	0V	6.3VAC	*285VDC *200VDC	*35VDC *6.3VDC to 7.5VDC	0V	
V 2	6J6	1VDC *21VDC	1VDC *60VDC	6.3VAC	0V	6VDC	1.2VDC *105VDC	0V	
V 3	6BA6	2VDC	0V	6.3VAC	0V	210VDC	*105VDC	6VDC	
V 4	6AU6	0V	0V	0V	6.3VAC	180VDC	65VDC	1.4VDC	
V 5	6AL5	1VDC	1VDC	6.3VAC	0V	2VDC	0V	1VDC	
V 6	6AV6	1.3VDC	0V	6.3VAC	0V	1.3VDC	1VDC	85VDC	
V 7	6C4	80VDC	0V	6.3VAC	0V	85VDC	2.5VDC	6VDC	
V 8	5Y3GT	0V	0V	250VDC	250VDC	0VDC	0VDC	6.3VAC	0V
V 9	6V6GT	0V	0V	250VDC	260VDC	0VDC	15VDC	6.3VAC	0V
V 10	6V6GT	0V	250VDC	0V	250VAC	0V	250VAC	0V	250VDC

† MEASURED WITH VTVM

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6CB6	5Meg	880Ω	880	310	1.35000 *120KΩ	*470KΩ	0Ω	
V 2	6J6	1.270KΩ *1.5Meg	1120KΩ	220	0Ω	330Ω	65KΩ	0Ω	
V 3	6BA6	*105KΩ	0Ω	0Ω	0Ω	190000	23500Ω	680Ω	
V 4	6AU6	0Ω	88Ω	0Ω	0Ω	1900000	1850Ω	330Ω	
V 5	6AL5	330000	68KΩ	0Ω	0Ω	Inf.	0Ω	Inf.	
V 6	6AV6	2Meg	0Ω	0Ω	0Ω	820KΩ	750ΩΩ	820KΩ	
V 7	6C4	820KΩ	Inf.	0Ω	0Ω	820KΩ	68KΩ	33000	
V 8	5Y3GT	0Ω	0Ω	125Ω	125Ω	55.3Ω	27Ω	2Ω	0Ω
V 9	6V6GT	0Ω	0Ω	120Ω	120Ω	470Ω	27Ω	2Ω	0Ω
V 10	6V6GT	0Ω	68Ω	Inf.	3000	Inf.	3000	Inf.	68Ω

† MEASURED FROM PIN 8 OF V10

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

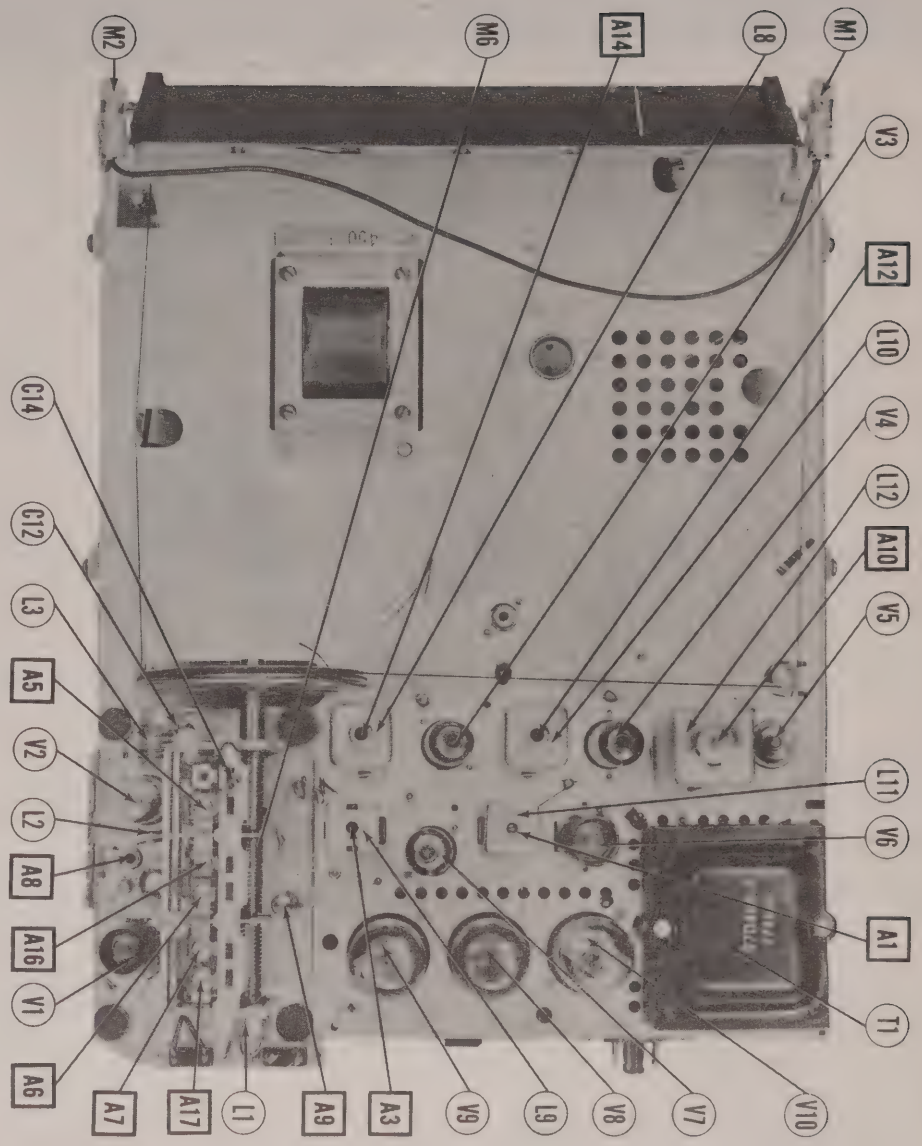
ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		RCA VICTOR PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	6CB6	6CB6	6CK	
V2	Converter	6J6	6J6	7BF	
V3	1st FM-AM-IF Amp.	6BA6	6BA6	7BK	
V4	2nd FM-IF Amp.	6AU6	6AU6	7BK	
V5	Ratio Detector	6AL5	6AL5	6BT	
V6	Detector-AVC-AF Amplifier	6AV6	6AV6	7BT	
V7	Phase Inverter	6C4	6C4	6BG	
V8	Power Output	6V6GT	6V6GT	7AC	
V9	Power Output	6V6GT	6V6GT	7AC	
V10	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	30	450	72052	AFH6J10I8A		UP3345V4		TVL-3741	▲ Filter
B	30	350						TVA-1205	■ Filter
C	40	25							▲ Bias Filter
C2	2	50	73747	E26F3		BBR2-50T		TVA-1301	Stabilizing Cap
C3	220		75611	SI220	D6-221	5W5T25	GP2K-220	19C13	Ant. Coupling
C4	5000		73473	BPD-005	DD-502	1D5D5	811-005	29C1	RF Amp. Screen
C5	5000		73473	BPD-005	DD-502	1D5D5	811-005	29C1	RF Amp. Plate Dec.
C6	100		39396	SI100	D6-101	5W5T1	GP1K-101	19C1	RF Coupling
C7	470	500	39644	1468-0005	S6-471	5W5T5	GP2K-471	1FM-35	RF Coupling
C8	5000		73473	BPD-005	DD-502	1D5D5	811-005	29C1	Osc. Plate Decoupling
C9	3		74733				N220K-3		Fixed Trimmer
C10	68		75612		TCN-68				Osc. Feedback
C11	15		39044		TCN-15				Osc. Grid Cap
C12	68		75612		TCN-68				Fixed Trimmer
C13	150		75614	SI150	D6-151	5W5T15	GP2K-151	19C12	Osc . Grid Cap
C14	5		75613	SI5N750			N750K-5		Fixed Trimmer
C15	47		75609	SI47	D6-470	5W5Q5	GP1K-470	19C25	Conv. Fil.
C16	5000		73473	BPD-005	DD-502	1D5D5	811-005	29C1	Conv. Plate Decoupling
C17	. 05	200	73553	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C18	5000		73473	BPD-005	DD-502	1D5D5	811-005	29C1	1st IF Amp. Screen
C19	5000		73473	BPD-005	DD-502	1D5D5	811-005	29C1	1st IF Amp. Decoupling
C20	5000		73473	BPD-005	DD-502	1D5D5	811-005	29C1	1st IF Amp. Fil.
C21	. 005	200	73920	P688-005	D6-502	PTE6D5	811-005	6TM-D5	2nd IF Amp. Cathode
C22	5000		73473	BPD-005	DD-502	1D5D5	811-005	29C1	2nd IF Amp. Screen
C23	5000		73473	BPD-005	DD-502	1D5D5	811-005	29C1	2nd IF Amp. Decoupling
C24	330	500	39640	1468-0003	D6-331	5W5T3	GP2K-331	1FM-335	Diode Load Cap
C25	330	500	39640	1468-0003	D6-331	5W5T3	GP2K-331	1FM-335	Diode Load Cap
C26	. 005	200	73920	P688-005	D6-502	PTE6D5	811-005	6TM-D5	RF Bypass
C27	. 005	200	73920	P688-005	D6-502	PTE6D5	811-005	6TM-D5	De-emphasis
C28	1500		75610	SI1500	D6-152	1W5D15	GP2L-152	29C8	Audio Coupling
C29	5000		73473	BPD-005	DD-502	1D5D5	811-005	29C1	AVC Filter
C30	150		75614	SI150	D6-151	1W5T15	GP2K-151	19C12	Diode RF Filter
C31	150		75614	SI150	D6-151	1W5T15	GP2K-151	19C12	Diode RF Filter
C32	1500		75610	SI1500	D6-152	1W5D15	GP2L-152	29C8	Audio Coupling
C33	. 001	200	73801	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Tone Comp.
C34	. 015	200	73797	P288-015	D6-103	PTE6S15		6TM-S15	Tone Comp.
C35	. 015	200	73797	P288-015	D6-103	PTE6S15		6TM-S15	Tone Comp.
C36	. 02	100	71928	P488-02	DF-203	PTE4S2		2TM-S2	Audio Coupling
C37	100		75437	SI100	D6-101	5W5T1	GP1K-101	19C11	AF Amp. Plate
C38	. 005	400	73920	P688-005	D6-502	PTE6D5	811-005	6TM-S5	Tone Comp.
C39	. 01	400	73561	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Audio Coupling
C40	. 02	400	73562	P488-02	DF-203	PTE4S2		4TM-S2	Audio Coupling
C41	150		75614	SI150	D6-151	5W5T15	GP2K-151	19C12	Output Screen
C42	. 001	1200	70642	P1688-001		PTE16D1		MB-D1	Output Plate
C43	. 001	1200	70642	P1688-001		PTE16D1		MB-D1	Output Plate
C44	5000		73473	BPD-005	DD-502	1D5D5	811-005	29C1	Output Fil.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	RCA Victor PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1A	1.5Meg	½	75537	Q18-139XX		SBBT-222-S	Volume Control - Tapped @ 500KΩ - See Note 3
B	Switch		Not req.	76-1		Not req.	Attach to R1A Per Instructions
R2A	2Meg	½	75561	Q11-139	AG-83-S	B-77	Bass Tone Control
B	Shaft		Not req.	Not req.	FS-3	Not req.	Attach to R2A Per Instructions
R3A	2 Meg	½	75562	Q13-139	AG-66-Z	B-76	Treble Tone Control
B	Shaft		Not req.	Not req.	FS-3	Not req.	Attach to R3A Per Instructions

Note 3. Some models use 1 meg control - tapped @ 150KΩ and 300KΩ

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	RCA VICTOR PART No.	IRC PART No.	
R4	2.2Meg	½		BTS-2.2Meg	RF Amp. Grid
R5	68Ω	½			RF Amp. Cathode
R6	470KΩ	½		BTS-470K	RF Amp. Screen
R7	8200Ω	1		BTA-8200	RF Amp. Plate
R8	680Ω	½		BTS-680	RF Amp. Plate Decoupling
R9	2.2Meg	½		BTS-2.2Meg	AVC Network
R10	2.2Meg	½		BTS-.2.2Meg	Mixer Grid
R11	120KΩ	½		BTS-120K	Mixer Plate - See Note 1
R12	390Ω	½			Parasitic Suppressor
R13	100Ω	½			Parasitic Suppressor
R14	18KΩ	½			Oscillator Grid
R15	120KΩ	½		BTS-120K	Oscillator Plate - See Note 1
R16	68Ω	½			1st IF Amp. Cathode
R17	22KΩ	½		BTS-22K	1st IF Amp. Screen
R18	680Ω	½		BTS-680	Decoupling
R19	120Ω	½		BTS-120	2nd FM IF Amp. Cathode
R20	22KΩ	½		BTS-22K	2nd FM IF Amp. Screen
R21	680Ω	½		BTS-680	2nd FM IF Amp. Decoupling
R22	1200Ω	½		BTS-1200	Balancing
R23	100Ω	½		BTS-100	Balancing
R24	3300Ω	½		BTS-3300	Ratio Det. Diode Load
R25	39KΩ	½		BTS-39K-5%	Ratio Det. Diode Load
R26	470KΩ	½		BTS-470K	AVC Network - See Note 2
R27	22Meg	½		BTS-22Meg	Delayed AVC Network
R28	15KΩ	½		BTS-15K	De-emphasis
R29	56KΩ	½		BTS-56K	Diode Filter
R30	150KΩ	½		BTS-150K	Diode Load
R31	220KΩ	½		BTS-220K	Diode Load
R32	150KΩ	½		BTS-150K	Tone Compensation
R33	1.5Meg	½		BTS-1.5Meg	Tone Compensation
R34	18KΩ	½		BTS-18K	Tone Compensation
R35	27KΩ	½		BTS-27K	Tone Compensation
R36	10Meg	½		BTS-10Meg	AF Amp. Grid
R37	270KΩ	½		BTS-270K	AF Amp. Plate
R38	68KΩ	½		BTS-68K	Phase Inv. Grid
R39	3300Ω	½		BTS-3300	Phase Inv. Cathode
R40	82KΩ	½		BTS-82K	Phase Inv. Plate
R41	470KΩ	½		BTS-470K	Output Grid - See Note 2
R42	470KΩ	½		BTS-470K	Output Grid - See Note 2
R43	100Ω	½		BTS-100	Output Screen
R44	2200Ω	5	73637	1 3/4A-2250	Filter-Wire Wound
R45	270Ω	2		BW-2-270	Bias Network
R46	1000Ω	½		BTS-1000	Bias Network
R47	3Ω	½	72323	BW-½-3	Series Dial Lamps - Wire Wound

Note 1. Some models use parallel resistors in this application to obtain desired value.
Note 2. Some models use series resistors in this application to obtain desired value.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	RCA VICTOR PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ .725A	640VCT .065ADC	5VAC @ 2A	6.3VAC @ 4.5A	75566		P-3051	PV-70 ①

① Add series resistor to reduce plate voltage..

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		RCA VICTOR PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	7.8KΩ CT	4.7Ω	500Ω CT	.5Ω	75557		A-3020		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			RCA VICTOR PART No.	VIKING PART No.	QUAM PART No.	
	FIELD	V. C. IMP.				
SP1	PM	4.7Ω	75681	12J12	12A4A	
	CONE DIA.	V. C. DIA.				
	11 1/2"	1"	75682			

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	RCA VICTOR PART No.	MEISSNER PART No.	
L1	FM Ant. Coil	0Ω		75615		
L2	FM RF Coil	0Ω		74815		
L3	FM Osc. Coil	0Ω		74817		
L4	Loop Antenna	.1Ω	1.4Ω	75705		
L5	AM RF Coil	73Ω	4.2Ω	75570		Secondary Tap @ 2.7Ω
L6	AM Osc. Coil	1.2Ω	7.5Ω	75569		Pick Up Winding Resistance 2.2Ω
L7	Fil. Choke	.5Ω		71942		
L8	1st FM IF	.2Ω	.2Ω	75559		
L9	1st AM IF	5Ω	12Ω	75558		Tertiary Winding Resistance 12Ω
L10	2nd FM IF	1.2Ω	.4Ω	75560		
L11	2nd AM IF	15Ω	15Ω	73037	16-6758	
L12	Ratio Det.	1.3Ω	.3Ω	73743		
L13	Cath. Choke	0Ω				Length of Wire Approximately 2" Long
L14	Cath. Choke	0Ω				Length of Wire Approximately 2" Long

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					RCA VICTOR PART No.		
M1	Bayonet	7.5	.2	White	11765		Type # 51
M2	Bayonet	7.5	.2	White	11765		Type # 51
M3	Bayonet	7.5	.2	White	11765		Type # 51

PHONO CARTRIDGE and NEEDLE

ITEM No.	REPLACEMENT DATA								REMARKS
	RCA VICTOR PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M4	75575	CAC-J Or AC-7	Q-33 A-3	W31AR	A53MG	34	0-1 Or S-1	

ASTATIC, SHURE AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED.

MISCELLANEOUS

ITEM No.	PART NAME	RCA VICTOR PART No.	NOTES
M5	Switch	75602	Function
M6	3 Gang Var. Cap	75567	(24-531MMF, 20-305MMF, 35-205MMF)
	Dial Pointer	75536	
	Knob	75714	Switch (Maroon)
	Knob	75715	Switch (Tan)
	Knob	75712	Tuning, Tone, Volume (Maroon)
	Knob	75713	Tuning, Tone, Volume (Tan)

PHOTOFACT* Folder

*TRADE MARK

RTMA MEMBER RADIO-TELEVISION MANUFACTURERS ASSOCIATION

STEWART-WARNER
MODELS 9121-A, 9121-B, 9122-A

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MODEL 9121-A

STEWART-WARNER
MODELS 9121-A, 9121-B, 9122-A

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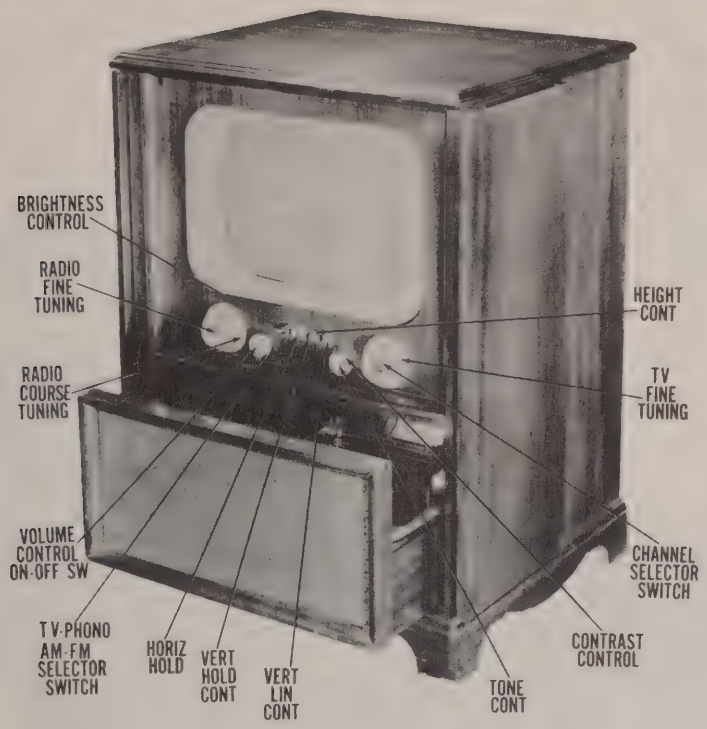
DATE 7-51 SET 138 FOLDER 9



STEWART-WARNER MODEL 9121-A

TRADE NAME	Stewart-Warner, Models 9121-A, -B	
MANUFACTURER	Stewart-Warner Corp., 1826 Diversey Pkwy., Chicago 14, Illinois	
TYPE SET	TV-AM-FM-Phono Combination Receiver	
TUBES	Thirty One	
POWER SUPPLY	110-120 Volts AC - 60 Cycle	RATING (TV) 2.1 Amp. @ 117 Volts AC (Radio) 1.0 Amp. @ 117 Volts AC
TUNING RANGE	(TV) Channels 2 thru 13 (FM) 88-108MC (AM) 540-1600KC	

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FOR SERVICE INFORMATION ON RECORD CHANGER UNIT - SEE V-M MODEL 950 PHOTOFACT FOLDER # 13 SET #107 OR RECORD CHANGER MANUAL CM-3.

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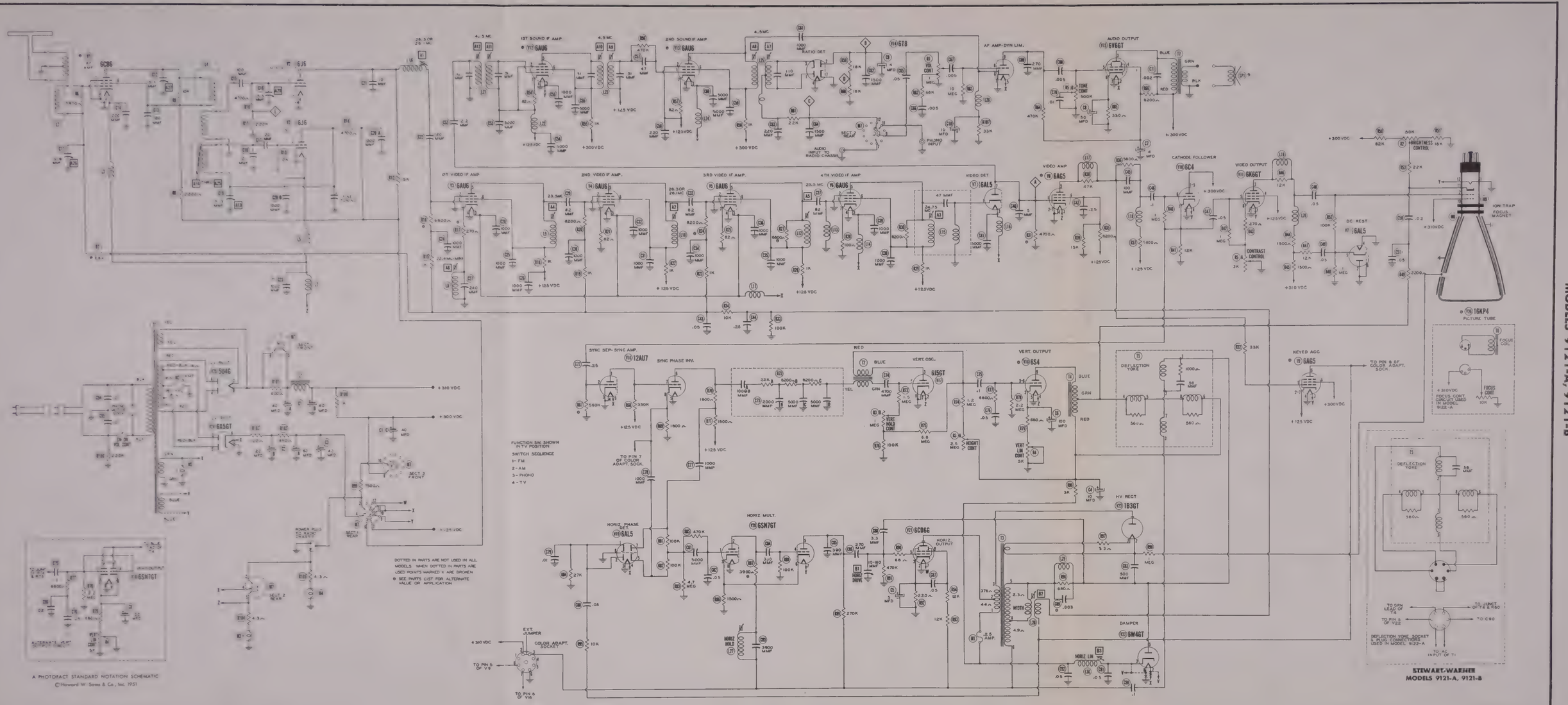
MODELS 9121-A, 9121-B, 9122-A


STEWART-WARNER
MODELS 9121-A, 9121-B
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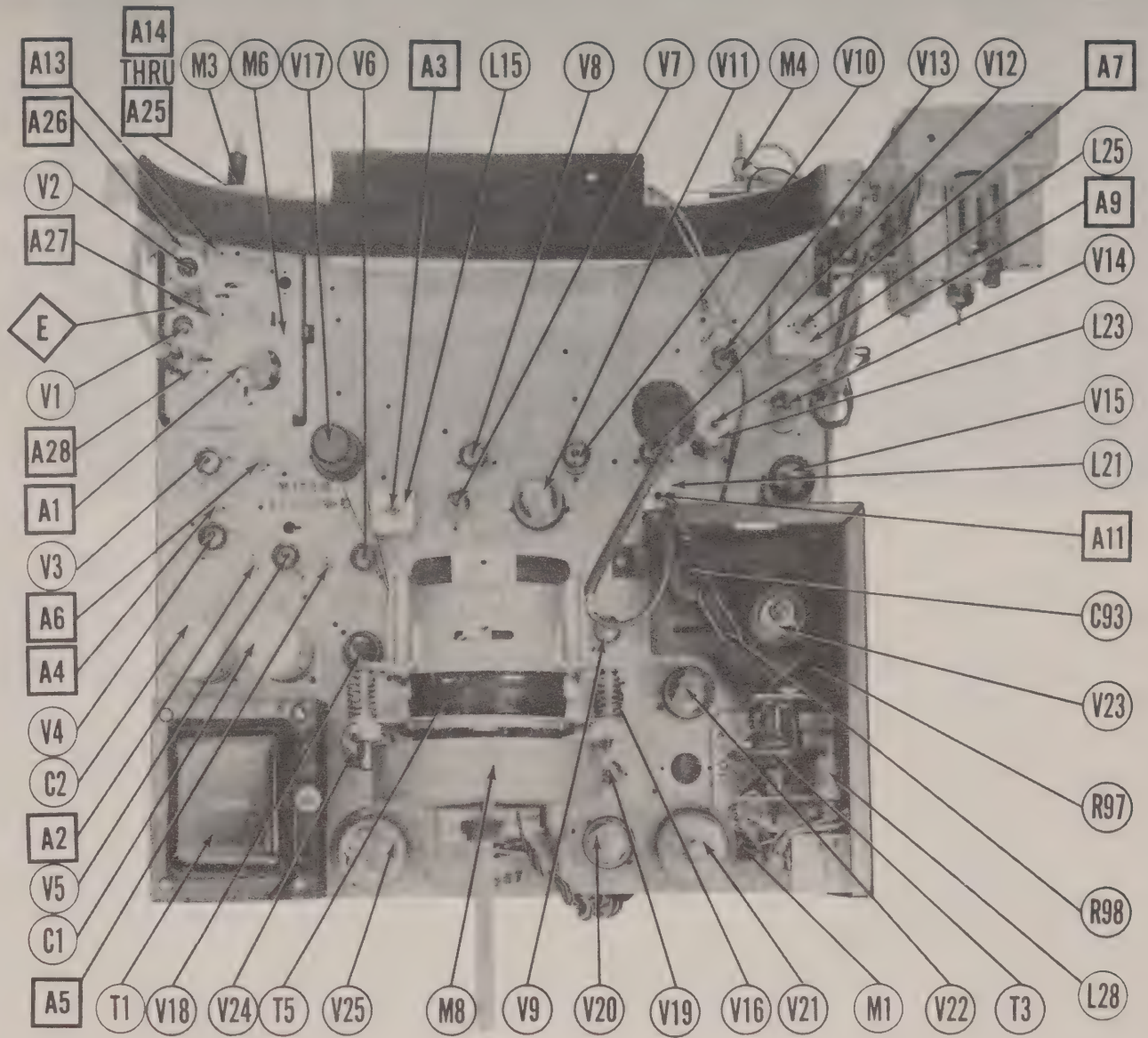
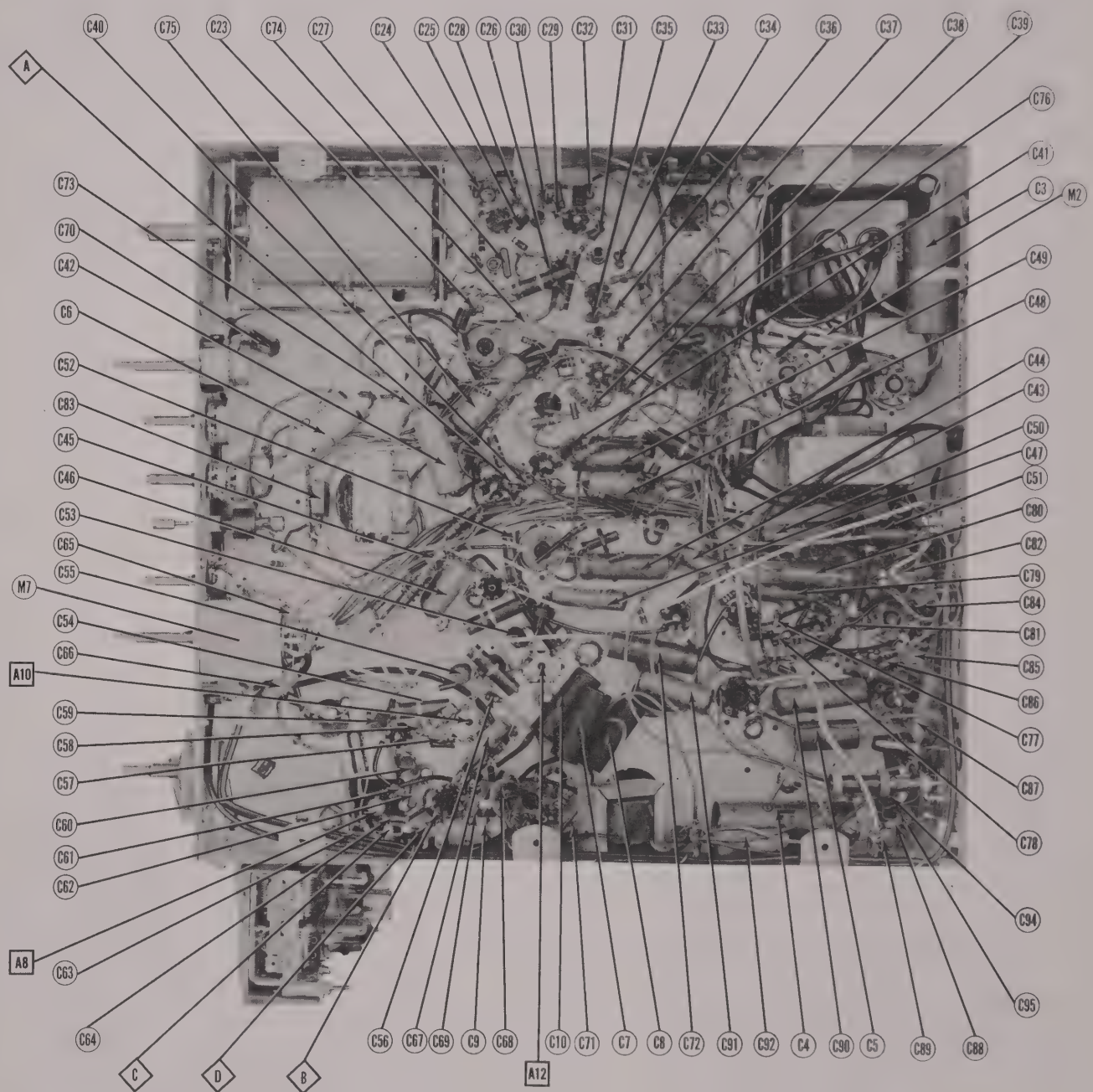
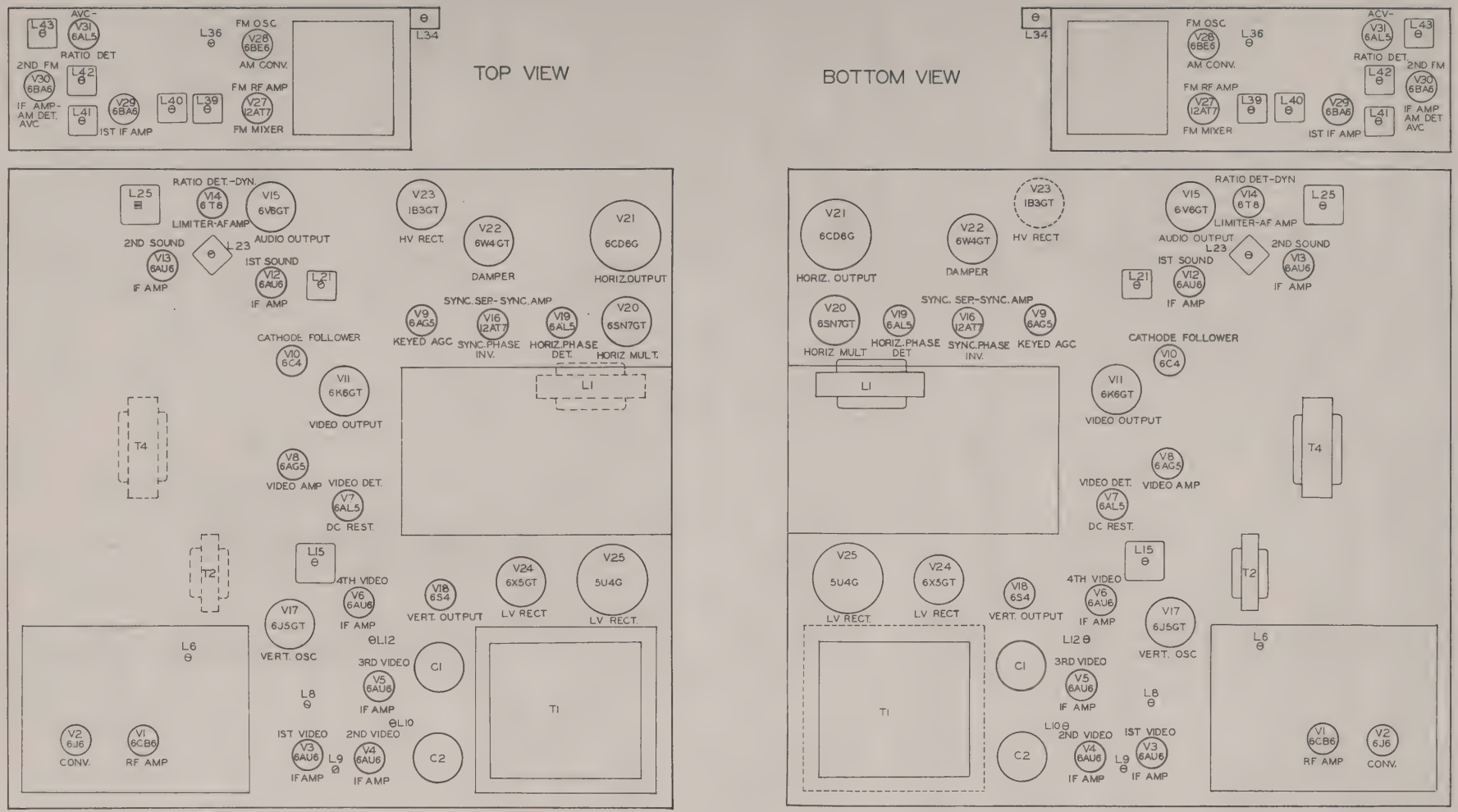
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
FUNCTION SW. SHOWN IN TV POSITION
SWITCH SEQUENCE
1- FM
2- AM
3- PHONO
4- TV
STEWART-WARNER
MODELS 9121-A, 9121-B



CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW- CAPACITOR AND ALIGNMENT IDENTIFICATION



TUBE PLACEMENT CHART

MODELS 9121-A, 9121-B

STEWART-WARNER

TV ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal oscillator tube, (V20), from its socket.
Turn the function selector switch to "TV", (maximum clockwise).

VIDEO IF ALIGNMENT

Remove the converter tube, (V2), and replace it with a 6J6 which has pin 1 removed. This will disable the local oscillator and prevent the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to the junction of R34 and C43. Connect the positive lead to chassis.
* On chassis which have an "E" in the series designation stamped on the rear chassis, A1 and A3, are tuned to 26.1MC instead of 26.3MC.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	26.3MC or 26.1MC * (See note above)	Any	DC probe thru 10KΩ to Point (A). Common to chassis.	A1, A2	Adjust for maximum deflection.
2.	"	"	24.75MC	"	"	A3	"
3.	"	"	23.5MC	"	"	A4, A5	"
4.	"	"	22.4MC	"	"	A6	Adjust for MINIMUM deflection.

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
Connect a 10KΩ isolation resistor in series with the vertical input lead of the oscilloscope, and a 1000MMF capacitor across the vertical input terminals.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	25MC (10MC SWP)	22.25MC 26.75MC	Any	Vert. Amp. thru 10KΩ to Point (A). Low side to chassis.		Check for response curve similar to fig. 1. If necessary retouch A1 thru A5 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.01MFD	High side to pin 1 (Grid) of 6AL5, (V7). Low side to chassis.	4.5MC (Unmod.)	Any	DC probe thru 10KΩ to Point (B). Common to chassis.	A7, A8, A9, A10, All, A12	Adjust for maximum deflection. Note that A7 has a very broad peak.
7.	"	"	"	"	DC probe to Point (C). Common to Point (D).	A7	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	.01MFD	High side to pin 1 (cathode of 6AL5, (V7). Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any	Vert. Amp. to Point (B). Low side to chassis.	A8, A9, A10, All, A12	Disconnect stabilizer capacitor C9. Adjust for maximum amplitude and symmetry as per fig. 2.
7.	"	"	"	"	"	Vert. Amp. to Point (C). Low side to chassis.	A7	Reconnect capacitor C9. Adjust A7 so 4.5MC occurs at center of crossover lines as per figure 3. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Complete oscillator alignment may not be required. If the oscillator seems to be off frequency approximately the same amount for a majority of the channels, it may be possible to correct them in one step using A13. It should be noted that this is an all channel oscillator circuit adjustment and should not be adjusted for any individual channel. If adjustment of A13 will not bring all channels well within the range of the fine tuning control, it will be necessary to adjust the channel strip adjustment for each channel that is off frequency. The channel strip adjustments are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Mid-position on the fine tuning control is the position where the "tooth" on the tuning cam points straight down.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. Amp. to Point (A). Low side to chassis.	A14	Adjust to place sound marker as shown in fig. 4. The video marker should be at 50%.
			207MC (10MC SWP)	205.25MC 209.75MC	12		A15	
			201MC (10MC SWP)	199.25MC 203.75MC	11		A16	
			195MC (10MC SWP)	193.25MC 197.75MC	10		A17	
			189MC (10MC SWP)	187.25MC 191.75MC	9		A18	
			183MC (10MC SWP)	181.25MC 185.75MC	8		A19	
			177MC (10MC SWP)	175.25MC 179.75MC	7		A20	
			85MC (10MC SWP)	83.25MC 87.75MC	6		A21	
			79 MC (10MC SWP)	77.25MC 81.75MC	5		A22	
			69MC (10MC SWP)	67.25MC 71.75MC	4		A23	
			63MC (10MC SWP)	61.25MC 65.75MC	3		A24	
			57MC (10MC SWP)	55.25MC 59.75MC	2		A25	

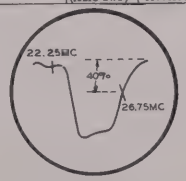


FIG. 1

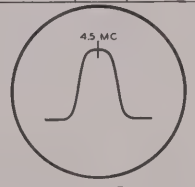


FIG. 2

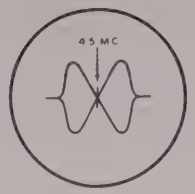


FIG. 3

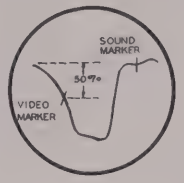


FIG. 4

FIG. 5

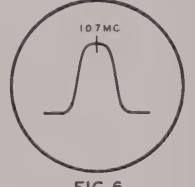


FIG. 6

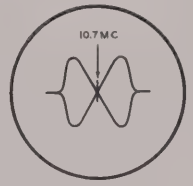


FIG. 7

TV ALIGNMENT INSTRUCTIONS (CONT.)

RF AND MIXER ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC SWP)	205.25MC 209.75MC	12	Vert. Amp. thru 10KΩ to Point (E). Low side to chassis.	A26, A27 A38	Adjust for response curve similar to fig. 5 with markers above 90%.
10.	"	"	213MC (10MC SWP)	211.25MC 215.75MC	13	"		Check all channels for response similar to fig. 5. If markers fall below 70% on any channel switch set for that channel. Recheck all channels to see that they have not been seriously effected.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
			85MC (10MC SWP)	83.25MC 87.75MC	6			
			79MC (10MC SWP)	77.25MC 81.75MC	5			
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

RADIO ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

A temporary pointer must be installed during alignment. Bend a piece of heavy wire around the planitary drive support bracket and shape the end so it points upward between the dial knob and the pilot lamp. The wire will cast a shadow on the dial knob.
Replace the coarse and fine tuning knobs.
Turn the fine tuning knob to maximum counter-clockwise. At this position the tuning gang should be fully closed and the temporary pointer should cast a shadow just to the left of the letters "AM" on the dial scale. If the shadow does not fall at the proper place, loosen the set screws in the hub of the dial drum on the tuning gang and close the gang manually, also position the dial properly, and then tighten the drive drum set screws.

AM ALIGNMENT

Turn the function selector switch to "AM", (second pos. clockwise).
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
11.	.1MFD	High side to stator on AM ant. section of tuning gang.	455KC (400% Mod.)	AM	Tuning gang fully open.	Across voice coil.	A29, A30 A31, A32	Adjust for maximum output.
12.		Loop	1500KC	"	1500KC	"	A33, A34	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
13.		Loop	600KC	"	600KC	"	A35	Adjust for maximum output. Repeat steps 12 and 13 until no further improvement can be made.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Turn the function selector switch to "FM", (fully counter-clockwise).

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
14.	.01MFD.	High side to stator on "FM" RF Section of tuning gang. Low side to chassis.	10.7MC (unmod.)	FM	Tuning gang fully open.	DC probe to Point (F). Common to chassis.	A36, A37 A38, A39, A40, A41	Adjust for maximum deflection. Notice that A36 has a very broad peak.
15.	"	"	"	"	"	DC probe to Point (G). Common to Point (F).	A36	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
14.	.01MFD	High side to stator on "FM" RF section of tuning gang. Low side to chassis.	10.7MC (450KC SWP)	FM	Point of non-interference.	Vert. Amp. to Point (F). Low side to chassis.	A37, A38 A39, A40 A41	Disconnect stabilizer capacitor C97. Adjust for maximum amplitude and symmetry as per fig. 6.
15.	"	"	"	"	"	Vert. Amp. to Point (G). Low side to chassis.	A36	Reconnect capacitor C97. Adjust A36 so 10.7MC occurs at center of corssover lines as per fig. 7. SLIGHTLY retouch A37 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
16.	270Ω carbon resistor	High side thru 270Ω to "FM" ant. terminal on terminals strip near tuning gang. Low side to chassis.	108MC (unmod.)	FM	108MC	DC probe to Point (F). Common to chassis.	A42	Adjust for amaximum deflection.
17.	"	"	106MC	"	Tune for max. deflection.	"	A43	"
18.	"	"	88MC	"	"	"		Check dial calibration. If dial is off more than .3MC, remove bottom cover and adjust L33 and L34 turn spacing for maximum deflection. (Remember that replacing bottom cover will alter calibration.) Repeat steps 16, 17, and 18 until calibration is correct and sensitivity is maximum with bottom cover in place.

STEWART-WARNER
MODELS 9121-A, 9121-B

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	-.2VDC	0V	6.2VDC	0V	95VDC	95VDC	0V		
V 2	6J6	105VDC	90VDC	6.2VDC	0V	-2.2VDC	§-4.8VDC	0V		
V 3	6AU6	0V	0V	6.3VAC	0V	120VDC	120VDC	1VDC		
V 4	6AU6	0V	0V	6.3VAC	0V	120VDC	120VDC	.7VDC		
V 5	6AU6	0V	0V	6.3VAC	0V	120VDC	120VDC	.7VDC		
V 6	6AU6	0V	0V	6.3VAC	0V	120VDC	120VDC	.8VDC		
V 7	6AL5	0V	0V	6.2VAC	0V	13VDC	0V	-.6VDC		
V 8	6AG5	-.6VDC	0V	6.3VAC	0V	80VDC	75VDC	0V		
V 9	6AG5	75VDC	125VDC	6.3VAC	0V	-.1VDC	255VDC	125VDC		
V 10	6C4	255VDC	0V	0V	6.3VAC	255VDC	17VDC	110VDC		
V 11	6K6GT	0V	0V	290VDC	130VDC	1.3VDC	0V	6.3VAC	12VDC	
V 12	6AU6	125VDC	125VDC	6.3VAC	0V	240VDC	240VDC	125VDC		
V 13	6AU6	110VDC	125VDC	6.2VAC	0V	240VDC	240VDC	125VDC		
V 14	6T8	-.2VDC	-1VDC	-.2VDC	0V	6.3VAC	-2VDC	0V	-.6VDC	65VDC
V 15	6V6GT	0V	6.3VAC	230VDC	215VDC	0V	255VDC	0V	12VDC	
V 16	12AU7	20VDC	-.4VDC	0V	0V	0V	90VDC	20VDC	19VDC	6.3VAC
V 17	6J5GT	0V	6.3VAC	65VDC	0V	-4.3VDC -3.8VDC	0V	0V	0V	
V 18	6S4	0V	29VDC 16VDC	0V	6.3VAC	0V	0V	0V	0V	440VDC
V 19	6AL5	0V	0V	0V	6.3VAC	7.5VDC	0V	-4.1VDC		
V 20	6SN7GT	.8VDC	310VDC	14VDC	-2.4VDC	125VDC	14VDC	6.3VAC	0V	
V 21	6CD6G	0V	0V	24VDC	0V	0V	0V	6.3VAC	150VDC	TOP CAP *
V 22	6W4GT	0V	0V	480VDC	0V	320VDC	325VDC	6.3VAC	0V	
V 23	1B3GT	* DO NOT MEASURE								
V 24	6X5GT	.1VAC	6.3VAC	190VAC	340VDC	190VAC	0V	0V	185VDC	
V 25	5U4G	130VDC	340VDC	0V	340VAC	0V	340VAC	0V	340VDC	
V 26	16KP4	0V	1.6VDC	PIN 10 325VDC	PIN 11 90VDC	PIN 12 6.3VAC				

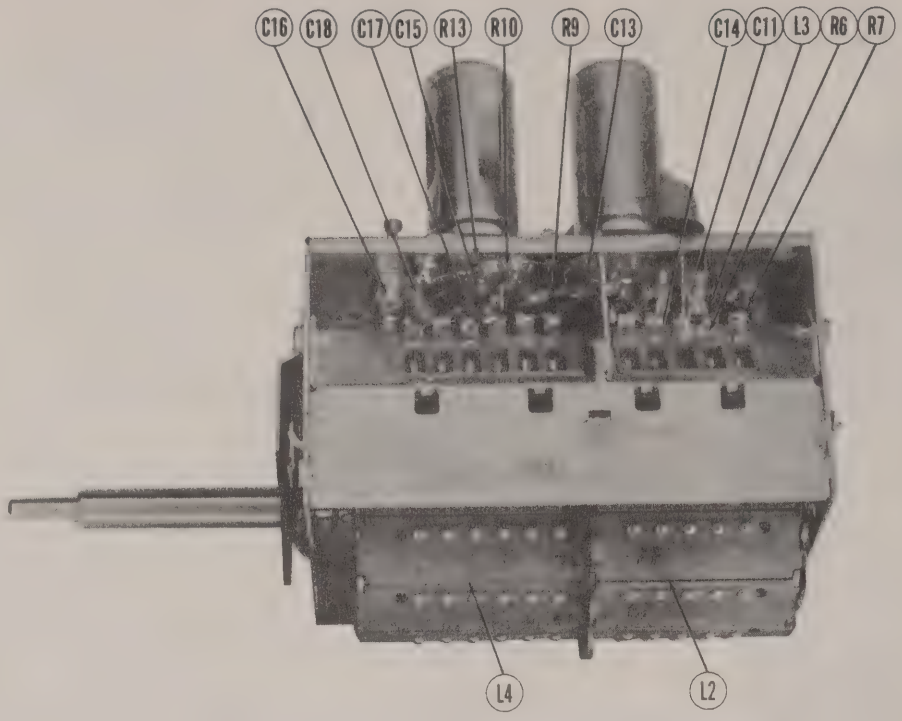
ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
§ TAKEN WITH VACUUM TUBE VOLTMETER
* DO NOT MEASURE

RESISTANCE READINGS

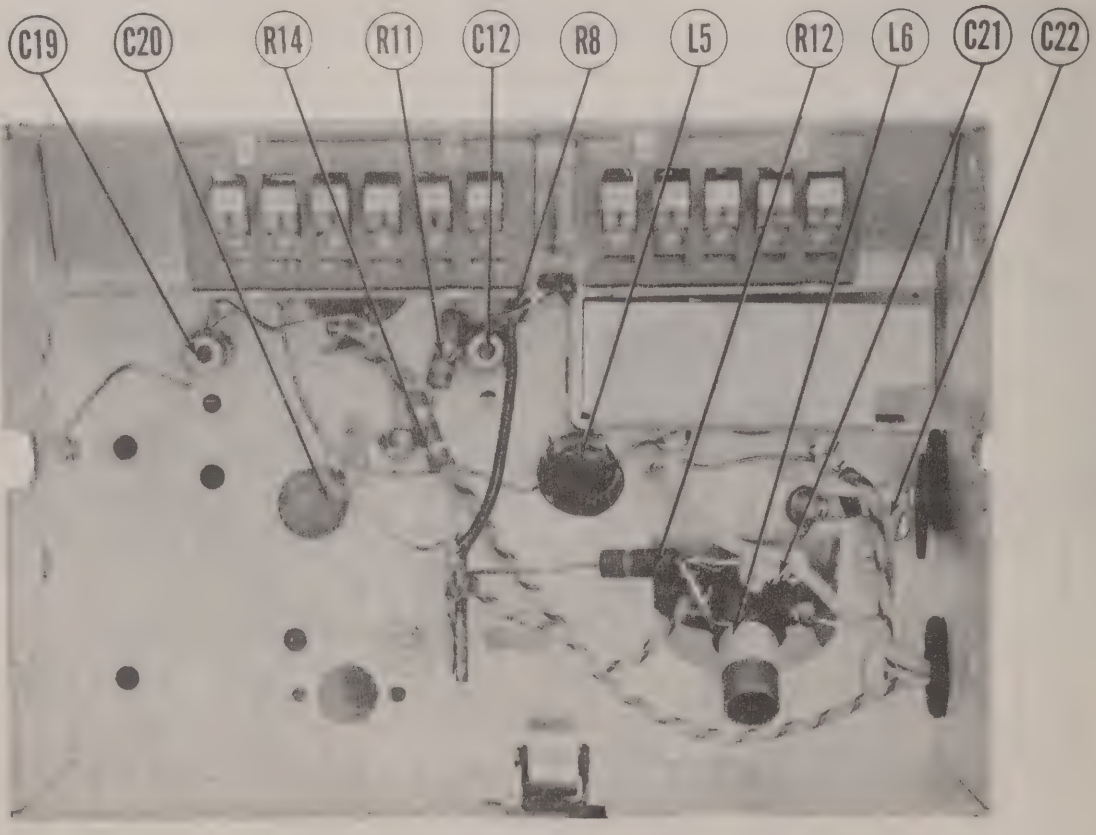
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	182KΩ	0Ω	.1Ω	0Ω	▲3.1KΩ	▲3.1KΩ	0Ω		
V 2	6J6	▲5.6KΩ	▲16KΩ	.1Ω	0Ω	225KΩ	10KΩ	0Ω		
V ?	6AU6	118KΩ	0Ω	.1Ω	0Ω	▲2KΩ	▲2KΩ	270Ω		
V 4	6AU6	119KΩ	0Ω	.1Ω	0Ω	▲2KΩ	▲2KΩ	82Ω		
V 5	6AU6	119KΩ	0Ω	.1Ω	0Ω	▲2KΩ	▲2KΩ	82Ω		
V 6	6AU6	2.2Ω	0Ω	.3Ω	0Ω	▲2KΩ	▲2KΩ	100Ω		
V 7	6AL5	2.2Ω	0Ω	.7Ω	0Ω	1Meg	0Ω	4.7KΩ		
V 8	6AG5	4.7KΩ	0Ω	.1Ω	0Ω	▲12KΩ	▲9KΩ	0Ω		
V 9	6AG5	▲45KΩ	▲950Ω	.1Ω	0Ω	100KΩ	†1KΩ	▲950Ω		
V 10	6C4	†1KΩ	Inf.	0Ω	.1Ω	†1KΩ	1Meg	12KΩ		
V 11	6K6GT	Inf.	0Ω	†3KΩ	▲950Ω	1Meg	270Ω 3.2KΩ	.1Ω		
V 12	6AU6	▲950Ω	▲950Ω	.3Ω	0Ω	†2KΩ	†2KΩ	▲1KΩ		
V 13	6AU6	▲470KΩ	▲950Ω	1Ω	0Ω	†2KΩ	†2KΩ	▲1KΩ		
V 14	6T8	Inf.	36KΩ	Inf.	0Ω	.1Ω	33KΩ	0Ω	10Meg	†480KΩ
V 15	6V6GT	Inf.	.1Ω	†1.6KΩ	†9.2KΩ	500KΩ	†1KΩ	0Ω	330Ω	
V 16	12AU7	▲330KΩ	560KΩ	0Ω	0Ω	0Ω	▲4.5KΩ	▲330KΩ	1.8KΩ	.1Ω
V 17	6J5GT	0Ω	.1Ω	#1.2Meg #2.7Meg.	Inf.	1.6Meg 2.6Meg	Inf.	0Ω	0Ω	
V 18	6S4	Inf.	680Ω 5.6KΩ	2.2Meg	.1Ω	0Ω	2.2Meg	Inf.	Inf.	#4.3KΩ
V 19	6AL5	27KΩ	27KΩ	0Ω	.1Ω	4.8Meg	0Ω	4.8Meg		
V 20	6SN7GT	5.1Meg	†3.9KΩ	1.5KΩ	100KΩ	†270KΩ	1.5KΩ	.1Ω	0Ω	
V 21	6CD6G	Inf.	0Ω	220Ω	Inf.	470KΩ	470KΩ	.1Ω	†24KΩ	TOP CAP #44Ω
V 22	6W4GT	Inf.	Inf.	450KΩ	Inf.	†90Ω	5KΩ	.1Ω	0Ω	
V 23	1B3GT	PINS 1 - 8 HAVE INFINITE RESISTANCE								TOP CAP # 465Ω
V 24	6X5GT	.2Ω	.1Ω	16Ω	†0Ω	16Ω	Inf.	0Ω	25KΩ	
V 25	5U4G	25KΩ	80KΩ	Inf.	30Ω	Inf.	30Ω	Inf.	80KΩ	
V 26	16KP4	0Ω	1.1Meg	PIN 10 †90Ω	PIN 11 38KΩ	70KΩ	PIN 12 .1Ω			

ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
▲ MEASURED FROM PIN 8 OF V24
MEASURED FROM PIN 3 OF V22
† MEASURED FROM PIN 8 OF V25

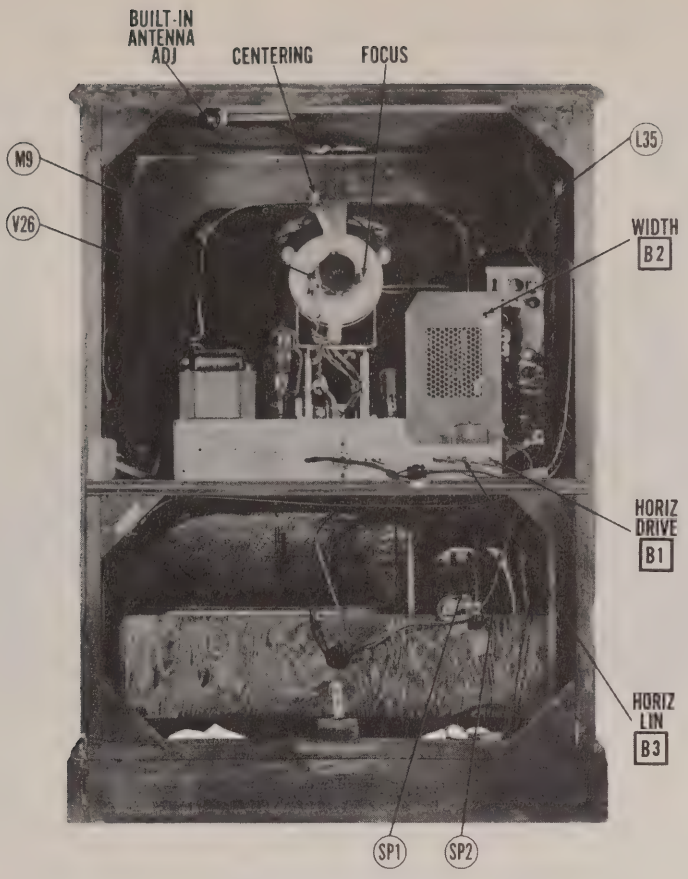
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Adjust the horizontal hold control to synchronize the picture horizontally.

Adjust the horizontal drive trimmer, (B1), counter-clockwise as far as possible without crowding or vertical lines appearing in the picture.

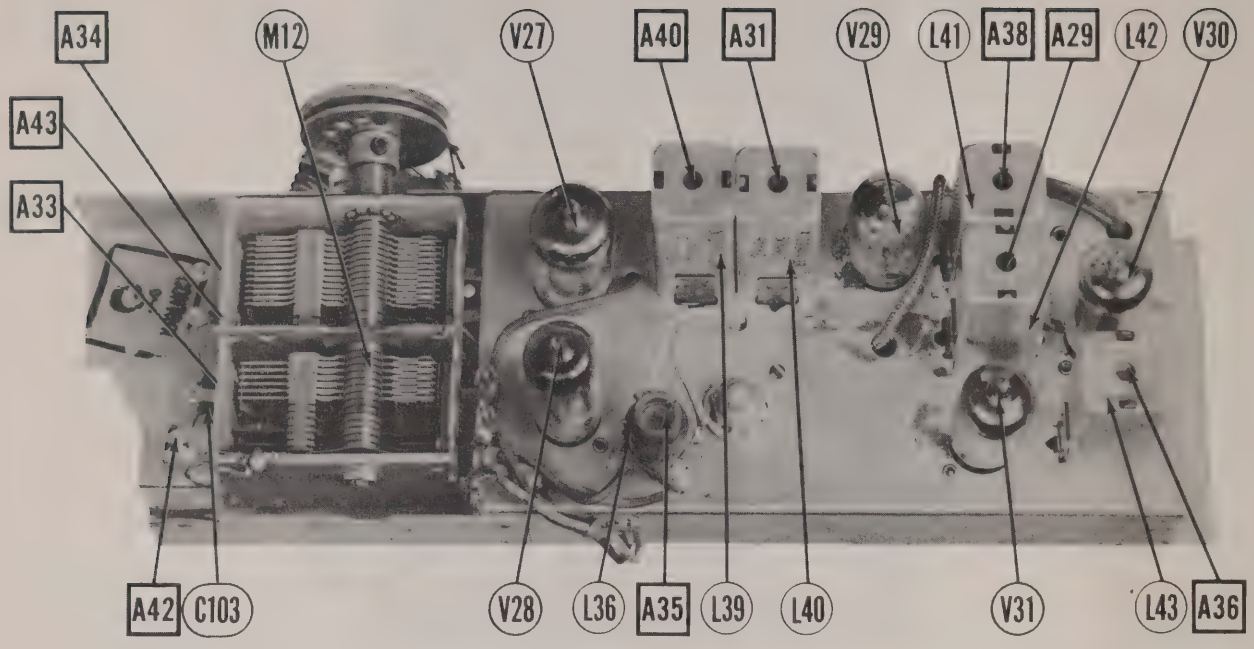
Adjust the width slug, (B2), until the picture fills the mask horizontally.

Adjust the horizontal linearity slug, (B3), until the picture is symmetrical from left to right. Slight readjustment of B1 may be required for optimum results.

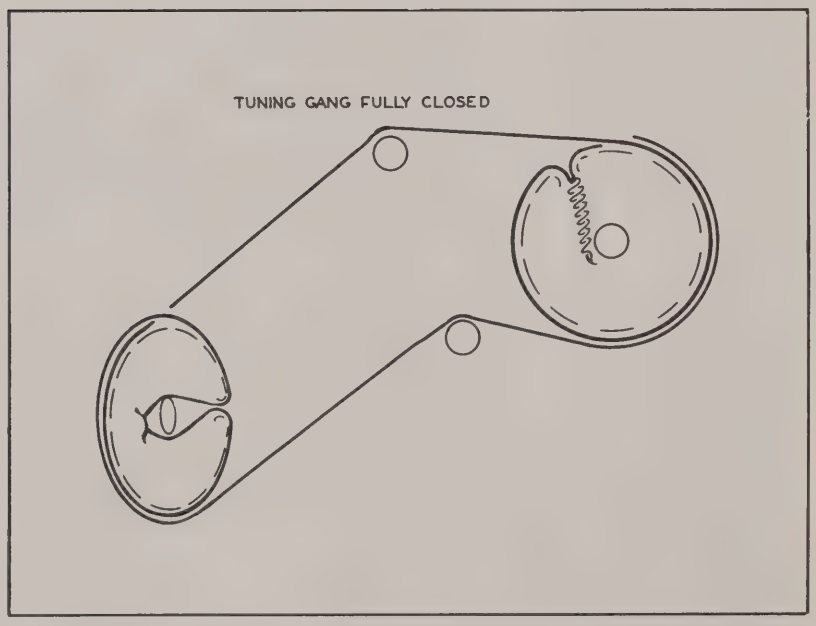
DISASSEMBLY INSTRUCTIONS

1. Remove eight push-on type control knobs.
2. Remove seven wood screws securing rear cover to chassis. Remove rear cover.
3. Disconnect built-in antenna.
4. Remove antenna terminal strip.
5. Disconnect speaker.
6. Disconnect phono input plug.
7. Disconnect AM loop antenna.
8. Disconnect FM external antenna lead.
9. Remove jewel pilot lamp.
10. Remove six hex head bolts from chassis. Remove chassis.
11. Remove four hex nuts from speaker. Remove speaker.

NOTE: FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE THE CHASSIS AS OUTLINED ABOVE.



RADIO CHASSIS-TOP VIEW



DIAL CORD STRINGING

TV PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		Stewart-Warner PART No.	STANDARD REPLACEMENT		
V1A	RF Amplifier	6CB6	6CB6	7CM	
B	RF Amplifier	6BC5	6BC5	7BD	
C	RF Amplifier	6AG5	6AG5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st Video IF Amp.	6AU6	6AU6	7BK	
V4	2nd Video IF Amp.	6AU6	6AU6	7BK	
V5	3rd Video IF Amp.	6AU6	6AU6	7BK	
V6	4th Video IF Amp.	6AU6	6AU6	7BK	
V7	Video Detector - DC Restorer	6AL5	6AL5	6BT	
V8A	Video Amplifier	6AG5	6AG5	7BD	
B	Video Amplifier	6AU6	6AU6	7BK	
V9A	Keyed AGC	6AG5	6AG5	7BD	
B	Keyed AGC	6AU6	6AU6	7BK	
V10	Cathode Follower	6C4	6C4	6BG	
V11	Video Output	6K6GT	6K6GT	7S	
V12A	1st Sound IF Amp.	6AU6	6AU6	7BK	
B	1st Sound IF Amp.	6BH6	6BH6	7CM	
V13A	2nd Sound IF Amp.	6AU6	6AU6	7BK	
B	2nd Sound IF Amp.	6BH6	6BH6	7CM	
V14	Ratio Detector - Dynamic Limiter - AF Amplifier	6T8	6T8	9E	
V15	Audio Output	6V6GT	6V6GT	7AC	
V16	Sync. Separator - Sync. Amplifier - Sync. Phase Inv.	12AU7	12AU7	9A	
V17	Vertical Osc.	6J5GT	6J5GT	6Q	
V18A	Vertical Output	6S4	6S4	9AC	
B	Vertical Output	6SN7GT	6SN7GT	8BD	
V19	Horiz. Phase Det.	6AL5	6AL5	6BT	
V20	Horizontal Mult.	6SN7GT	6SN7GT	8BD	
V21	Horizontal Output	6CD6G	6CD6G	5BT	
V22	Damper	6W4GT	6W4GT	4CG	
V23	H.V. Rectifier	1B3GT	1B3GT	3C	
V24	LV Rectifier	6X5GT	6X5GT	6S	
V25	LV Rectifier	5U4G	5U4G	5T	
V26A	Picture Tube	16KP4	16KP4	12D	
B	Picture Tube	16RP4	16RP4	12D	
C	Picture Tube	16TP4	16TP4	12D	
D	Picture Tube	19AP4	19AP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	Stewart-Warner PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	40	450	508072	AFH888J		UPT44445		TVL-3787	● Filter
B	40	450							■ Filter
C	40	450							▲ Filter
C2A	60	300	508073	AFH1242J		UPT6245		TVL-2579	● Filter
B	20	300							■ Filter
C3	40	300	160095	PRS450/40		BR4035		TVA-1611	Filter
C4	10	600	508680	PRS600/10		BRHV610		TVA-1102	Decoupling
C5	5	50	508684	PRS150/4		BR550		TVA-1303	Horiz. ¶Output Cathode
C6	100	50	508682	PRS50/100		BRH501		TVA-1310	Vert. Output Cathode
C7	4	50	504719	PRS150/4		BR550		TVA-1303	Decoupling
C8	50	25	502527	PRS25/50		BR502A		TVA-1206	Audio Output Cathode
C9	4	150	502547	PRS150/4		BR415		TVA-1402	Stabilizing Cap
C10	10	150	505174	PRS150/12		BR1015		TVA-1406	Dyn. Limiter Cap
C11	3-9		509064						Variable Trimmer
C12	.5-3		507968		829-3				Variable Trimmer
C13	120		513439	SI120	D6-121		GP2K-121	19C29	RF Amp. Decoupling
C14	1000		513009	SI1000	D6-102	1W5D1	GP2L-102	19C1	RF Amp. Fil.
C15	100		513440	SI100N750	TCN-100		N750L-101	19C11	RF Coupling
C16	.5-3		509063		829-3				Variable Trimmer
C17	20		513441	SI20NPO	TCZ-20		NPOK-200		Osc. Grid Cap
C18	10		513442	SI10N750	TCN-10		N750K-100	19C4	Fixed Trimmer
C19	.5-3		507968		829-3				Variable Trimmer
C20A	1000		508576	BPD-001	DD-2-102		812-.001	29C7	RF Bypass
B	1000								Conv. Fil.
C21	10		513444	SI10NPO	TCZ-10		NPOK-100	19C3	Fixed Trimmer
C22	120		512542	SI120	D6-121		GP2K-121	19C29	IF Coupling
C23	1000		513009	SI1000	D6-102	1W5D1	GP2L-102	19C1	Fil. Bypass †
C24	1000		513009	SI1000	D6-102	1W5D1	GP2L-102	19C1	AGC Filter
C25	1000		513009	SI1000	D6-102	1W5D1	GP2L-102	19C1	1st Video IF Decoupling
C26	1000		513009	SI1000	D6-102	1W5D1	GP2L-102	19C1	Decoupling
C27	240	500	512532	1469-00025	TCZ-240	5R5T25		MS-325	Fixed Trimmer
C28	1000		513009	SI1000	D6-102	1W5D1	GP2L-102	19C1	1st Video IF Fil.
C29	82		513016	SI82	TCZ-82	5W5T1	GP1K-820	19C11	IF Coupling
C30	1000		513009	SI1000	D6-102	1W5D1	GP2L-102	19C1	AGC Filter
C31	1000		513009	SI1000	D6-102	1W5D1	GP2L-102	19C1	2nd Video IF Decoupling
C32	1000		513009	SI1000	D6-102	1W5D1	GP2L-102	19C1	2nd Video IF Fil.
C33	82		513016	SI82	TCZ-82	5W5T1	GP1K-820	19C11	IF Coupling
C34	1000		513009	SI1000	D6-102	1W5D1	GP2L-102	19C1	AGC Filter
C35	1000		513009	SI1000	D6-102	1W5D1	GP2L-102	19C1	3rd Video IF Decoupling
C36	1000		513009	SI1000	D6-102	1W5D1	GP2L-102	19C1	3rd Video IF Fil.
C37	82		513016	SI82	TCZ-82	5W5T1	GP1K-820	19C11	IF Coupling
C38	1000		513009	SI1000	D6-102	1W5D1	GP2L-102	19C1	4th Video IF Decoupling
C39	1000		513009	SI1000	D6-102	1W5D1	GP2L-102	19C1	4th Video IF Fil.
C40	5		513432	SI15NPO	TCZ-4.7	5W5V5	NPOK-050	MS-55	Video Det. Filter
C41	5000		513013	BPD-005	DD-502	1D5D5	811-005	29C1	Video Det. - DC Rest. Fil.
C42	.25	200	512045	P488-25		GT2P25		2TM-P25	Video Amp. Screen
C43	.05	200	512027	P288-05	DF-503	PTE4S5		2TM-S5	AGC Filter
C44	.25	200	512045	P488-25		GT2P25		2TM-P25	AGC Filter
C45	100		513003	SI100	D6-101	5W5T1	GP1K-101	19C11	Video Coupling
C46	.1	200	512003	P288-1	DF-104	PTE4P1		2TM-P1	Video Coupling
C47	.05	200	512027	P288-05	DF-503	PTE4S5		2TM-S5	Video Coupling
C48	.05	600	512031	P688-05	DF-503	PTE6S5		6TM-S5	Video Coupling
C49	.05	600	512031	P688-05	DF-503	PTE6S5		6TM-S5	Video Coupling
C50	.02	600	512019	P688-02	DF-203	PTE6S2		6TM-S2	Vert. Sweep Coupling
C51	.05	600	512031	P688-05	DF-503	PTE6S5		6TM-S5	Integrator Cap
C52	2.2		513001		TCZ-2.2				Sound IF Coupling
C53	5000		513013	BPD-005	DD-502	1D5D5	811-005	29C1	1st Sound IF Decoupling

TV PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No	RATING CAP	RATING VOLT	REPLACEMENT DATA Stewart-Warner PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C54	5000		513013	[illegible]	DD-502	DD5D5	811-005	29C1	RF Bypass
C55	5000		513013	[illegible]	DD-502	DD5D5	811-005	29C1	1st Sound IF Decoupling
C56	1000		513009	[illegible]	D6-102	1W5D1	GP21-102	19C1	1st Sound IF Fil.
C57	47		513477	[illegible]	S147	5W5Q5	GP1K-470	19C25	Sound IF Coupling
C58	220		513018	[illegible]	S220	5W5T25	GP2K-221	19C13	RF Bypass
C59	5000		513013	[illegible]	DD-502	DD5D5	811-005	29C1	2nd Sound IF Decoupling
C60	5000		513013	[illegible]	DD-502	DD5D5	811-005	29C1	2nd Sound IF Fil.
C61	1000		[illegible]	[illegible]	D6-102	1W5D1	GP21-102	19C1	Sound IF Coupling
C62	1500		513010	[illegible]	D6-152	1W5D15	GP21-152	29C8	RF Bypass
C63	220	500	512527	1468-00025	D6-221	5W5T25	GP2K-221	1FM-325	Diode Load Cap
C64	1500		513010	[illegible]	D6-152	1W5D15	GP21-152	29C8	De-emphasis
C65	.05	200	[illegible]	[illegible]	DF-503	PTE485		2TM-S5	Audio Coupling
C66	.005	600	512007	[illegible]	D6-502	PTE6D5	811-005	6TM-D5	Tone Comp.
C67	.005	600	512007	[illegible]	D6-502	PTE6D5	811-005	6TM-D5	Audio Coupling
C68	.005	600	[illegible]	[illegible]	D6-502	PTE6D5	811-005	6TM-D5	Audio Coupling
C69	270		513006	[illegible]	D6-271	5W5T25	GP2K 271	19C31	AF Amp. Plate
C70	01	600	512013	[illegible]	D6-102	PTE6S1	821-01	6TM-S1	Tone Comp.
C71	.002	600	512003	[illegible]	D6-202	PTE6D2	GP2-333-202	6TM-D2	Audio Output Plate
C72	.25	600	[illegible]	684-25		GMP2P25		6TM-P25	Sync. Coupling
C73A	10000		[illegible]	P688-01		PTE6S1	GP2-333-103	6TM-S1	Vert. Sync. Coupling
B	2000		[illegible]	[illegible]	PC-100	PTE6D2	GP2-333-202	6TM-D2	Integrator Net
C	5000		[illegible]	[illegible]	DD-103	PTE6D5	GP2-333-502	6TM-D5	Integrator Net
D	5000		[illegible]	[illegible]		PTE6D5	GP2-333-502	6TM-D5	Integrator Net
C74	4700	1000	512533	1467-005	D6-472	1D5D5	GP2-333-472	1FM-25	Vert. Osc. Grid Cap
C75	1	600	512037	P688-1	DF-104	PTE6P1		6TM-P1	Vert. Sweep Coupling
C76	.05	600	512308	[illegible]	DF-503	PTE6S5		6TM-S5	Vert. Discharge
C77	1000		[illegible]	511000	D6-102	1W5D1	GP2L-102	19C1	Horiz. Sync. Coupling
C78	1000		[illegible]	511000	D6-102	1W5D1	GP2L-102	19C1	Horiz. Sync. Coupling
C79	01	600	[illegible]	[illegible]	D6-103	PTE6S1	821-01	6TM-S1	Horiz. AFC Filter
C80	.05	600	512031	P688-05	DF-503	PTE6S5		6TM-S5	Horiz. Feedback
C81	5000		513013	BPD-005	DD-502	1D5D5	811-005	29C1	Horiz. AFC Filter
C82	.05	200	512037	P288-05	DF-503	PTE485		2TM-S5	Horiz. AFC Filter
C83	3900	500	512540	1464-004		1DR5D4	GP2-333-402	MS-34	Fixed Trimmer
C84	330	500	512549	1468-00035	D6 331	5W5T3	GP2K-331	1FM-335	Horiz. MV Feedback
C85	390	500	512535	1469-0004	D6-391	5R5T4	GP2K-391	MS-34	Horiz. Discharge
C86	270	500	512536	1468-00025	D6-271	5W5T25	GP2K-271	1FM-325	Horiz. Sweep Coupling
C87	.05	600	512031	[illegible]	DF-503	PTE6S5		6TM-S5	Horiz. Output Screen
C88	3 3		513025				NPOK-3R3		Horiz. Feedback
C89	.003	600	512005	P688-003	D6-302	PTE6D3	GP2-333-302	6TM-D3	Fixed Trimmer *
C90	.1	600	512037	P688-1	DF-104	PTE6P1		6TM-P1	Horiz. Sweep Coupling
C91	05	600	512031	P688-05		PTE6S5		6TM-S5	Damper Filter
C92	05	600	512039	P688-05		PTE6S5		6TM-S5	Damper Filter
C93	500	20000	508888	HV20C	TV2-502				HV Filter
C94	01	400	512255	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Line Filter
C95	01	400	512255	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Line Filter
C96	.02								Vert. Discharge Cap ¶

* Items C73A, C73B, C73C, C73D, R72A, R72B, R72C are combined in one unit.
§ Models with letter "E" not included in series designation use 220MMFD. Mfgrs. part number 513018.
* Used in models having letter "F" included in series designation.
¶ Connected in parallel with C76 in chassis with letter "C" included in series designation.

CONTROLS

ITEM No	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Stewart-Warner PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1Meg	½	508182	Q13-137X	AK-98-Z		Volume Control - Tapped ② 250KΩ
B	Shaft		Not req.	RQ	FKS-1/4		Attach to R1A Per Instructions
C	Switch		Not req.	T6-1	SWB		Attach to R1A Per Instructions
R2A	50KΩ	½	508889	Q11-123	AG-44-S	AN-31	Brightness Control
B	Shaft		Not req.	Not req.	RS-2	AK-4	Attach to R2A Per Instructions
R3A	2.5Meg	½	508893				Height Control - Front
B	1Meg	½					Vertical Hold Control - Rear
R4A	5000Ω	½	508891	Q11-114	AM-19-S	AN-10	Vertical Linearity Control
B	Shaft		Not req.	Not req.	RS-2	AK-4	Attach to R4A Per Instructions
R5A	3000	2	509076				Contrast Control - Wire Wound - Front
B	500KΩ	½					Tone Control - Rear

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Stewart-Warner PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE SPECIFIED
R6	3900Ω	½	510147	BTS-3900	Antenna Coil Shunt
R7	68KΩ 20%	½		BTS-68K	AGC Network - See Note 1
R8	2200Ω	½	510143	BTS-2200	RF Amp. Decoupling
R9	10KΩ	½	510155	BTS-10K	RF Coil Shunt
R10	4700Ω	½	510149	BTS-4700	Mixer Grid
R11	220KΩ 20%	½	510179	BTS-220K	Mixer Grid
R12	15KΩ 20%	½	510158		Mixer Plate
R13	10KΩ	½	510155	BTS-10K	Osc. Grid
R14	4700Ω	½	510149	BTS-4700	Osc. Plate
R15	1000Ω 20%	½	510137	BTS-1000	AGC Network
R16	6800Ω	½	510151	BTS-6800	1st Video IF Amp. Grid - See Note 3
R17	270Ω	½	510126	BTS-270	1st Video IF Amp. Cathode - See Note 4
R18	1000Ω	½	510137	BTS-1000	1st Video IF Amp. Decoupling
R19	1000Ω 20%	½	510137	BTS-1000	AGC Network
R20	8200Ω	½	510153		2nd Video IF Amp. Grid
R21	82Ω	½	510117	BTS-82	2nd Video IF Amp. Cathode
R22	1000Ω	½	510137	BTS-1000	2nd Video IF Amp. Decoupling
R23	1000Ω	½	510137	BTS-1000	AGC Network
R24	8200Ω	½	510153	BTS-8200	3rd Video IF Amp. Grid - See Note 7
R25	82Ω	½	510117	BTS-82	3rd Video IF Amp. Cathode
R26	1000Ω	½	510137	BTS-1000	3rd Video IF Amp. Decoupling
R27	6800Ω	½	510151	BTS-6800	4th Video IF Transformer Shunt - See Note 5
R28	100Ω 20%	½	510119	BTS-100	4th Video IF Amp. Cathode
R29	1000Ω 20%	½	510137	BTS-1000	4th Video IF Amp. Decoupling
R30	8200Ω	½	510153	BTS-8200	5th Video IF Transformer Shunt
R31	4700Ω	½	510148	BTS-4700	Video Det. Diode Load - See Note 8
R32	33KΩ	½	510164	BTS-33K	Keyed AGC Grid
R33	100KΩ 20%	½	510173	BTS-100K	AGC Network
R34	10KΩ 20%	½	510155	BTS-10K	AGC Network
R35	8200Ω	½	510153	BTA-8200	Video Amp. Screen
R36	5600Ω	½	510150	BTS-5600	Video Amp. Plate
R37	5600Ω	½	510150	BTS-5600	Video Amp. Plate
R38	47KΩ	½	510166	BTS-47K	Video Peaking Coil Shunt
R39	15KΩ	½	510257	BTA-15K	Voltage Divider
R40	1Meg 20%	½	510191	BTS-1Meg	Cathode Follower Grid

RESISTORS (CONT.)

ITEM No	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Stewart-Warner PART No.	IRC PART No.	IDENTIFICATION CODES
R41	12KΩ	½	510356	BTB-12K	Cathode Follower Cathode
R42	1Meg 20%	½	510191	BTS-1Meg	Video Output Grid
R43	270Ω	½	510126	BTS-270	Video Output Cathode
R44	1500Ω	2	510339	BTB-1500	Video Output Plate
R45	1500Ω	2	510339	BTB-1500	Video Output Plate
R46	12KΩ 5%	2	510723	BTS-12K-5%	Video Peaking Coil Shunt
R47	12KΩ 5%	½	510723	BTS-12K-5%	Isolation
R48	1Meg	½	510191	BTS-1Meg	DC Restorer Diode Load
R49	2200Ω 20%	½	510143	BTS-2200	Vert. Retrace Blanking Network
R50	82KΩ	½	510171	BTS-82K	Voltage Divider
R51	18KΩ	½	510159	BTS-18K	Voltage Divider
R52	100KΩ 20%	½	510173	BTS-100K	Picture Tube Grid
R53	22KΩ 20%	½	510161	BTS-22K	Picture Tube Cathode
R54	82Ω	½	510117	BTS-82	1st Sound IF Amp. Cathode
R55	1000Ω 20%	½	510137	BTS-1000	1st Sound IF Amp. Decoupling
R56	470KΩ	½	510185	BTS-470K	2nd Sound IF Amp. Grid
R57	82Ω	½	510117	BTS-82	2nd Sound IF Amp. Cathode
R58	1000Ω 20%	½	510137	BTS-1000	2nd Sound IF Amp. Decoupling
R59	18KΩ	½	510159	BTS-18K	Ratio Det. Diode Load
R60	18KΩ	½	510159	BTS-18K	Ratio Det. Diode Load
R61	22KΩ	½	510160	BTS-22K	De-emphasis
R62	68KΩ	½	510170	BTS-68K	Tone Compensation
R63	10Meg	½	510197	AF Amp. Grid	
R64	470KΩ	½	510185	BTS-470K	AF Amp. Plate
R65	330Ω	1	510227	BTA-330	Output Cathode
R66	8200Ω	½	510153	BTS-8200	Decoupling
R67	560KΩ	½		BTS-560K	Sync. Sep. Grid - See Note 2
R68	330KΩ	½	510181	BTS-330K	Sync. Sep. Plate
R69	1800Ω 5%	½	510739	BTS-1800-5%	Sync. Amp. - Phase Inv. Cathode
R70	1800Ω 5%	½	510739	BTS-1800-5%	Sync. Amp. - Phase Inv. Plate
R71	1800Ω 5%	½	510739	BTS-1800-5%	Sync. Amp. - Phase Inv. Plate
R72A	22KΩ		508062 *	BTS-22K	Integrator
B	8200Ω			BTS-8200	Integrator
C	8200Ω			BTS-8200	Integrator
R73	1.5Meg 5%	½	510721	BTS-1.5Meg-5%	Vert. Osc. Grid
R74	1.2Meg	½	510738	BTS-1.2Meg	Vertical Osc. Plate
R75	6.8Meg	½	510196	BTS-6.8Meg	Voltage Divider
R76	100KΩ	½	510172	BTS-100K	Voltage Divider
R77	680Ω	½	510151	BTS-6800	Vertical Blanking
R78	2.2Meg	½	510193	BTS-2.2Meg	Vertical Output Grid
R79	680Ω	½	510133	BTS-680	Vertical Output Cathode
R80	30000Ω 5%	2	510713		Decoupling
R81	100KΩ 20%	½	510173	BTS-100K	Horizontal Phase Det. Diode Load
R82	100KΩ 20%	½	510173	BTS-100K	Horizontal Phase Det. Diode Load
R83	4.7Meg	½	510195	BTS-4.7Meg	Horizontal Phase Det. Diode Load
R84	27KΩ	½	510162	BTS-27K	Horizontal Phase Det. Diode Load
R85	470KΩ 20%	½	510185	BTS-470K	Horizontal AFC Filter
R86	1500Ω	½	510139	BTS-1500	Horizontal MV Cathode
R87	3900Ω	½	510147	BTS-3900	Horizontal MV Plate - See Note 8
R88	100KΩ	½	510172	BTS-100K	Horizontal MV Grid
R89	270KΩ	½	510180	BTS-270K	Horizontal MV Plate
R90	68Ω 20%	½	510116		Parasitic Suppressor
R91	470KΩ	½	510184	BTS-470K	Horizontal Output Grid
R92	22ΩΩ	5	510176	1 3/4A-225	Horizontal Output Cathode - Wire Wound
R93	12KΩ	2	510356	BTB-12K	Horizontal Output Screen
R94	12KΩ	2	510356	BTB-12K	Horizontal Output Screen
R95	10KΩ	1	510254	BTA-10K	Horizontal Feedback
R96	680Ω	½	510133	BTS-680	Damping
R97	3.3Ω	½	510725		HV Rectifier Filament
R98	1Meg 20%	2	510391		HV Filter
R99	7500Ω	5	510727	1 3/4A-7500	Voltage Divider - Wire Wound
R100	1000Ω	10	510754	1 3/4A-1000	Filter - Wire Wound
R101	600Ω	10	510741	1 3/4A-600	Voltage Dropping - Wire Wound
R102	850Ω	5	510726		Filter - Wire Wound
R103	100Ω 20%	2	510319		Surge Limiter
R104	4.3Ω	1	510704	BW-1-4.3	Pilot Light Dropping - Wire Wound
R105	4.3Ω	1	510704	BW-1-4.3	Pilot Light Dropping - Wire Wound
R106	220KΩ 20%	½	510179	BTS-220K	Isolation
R107	33KΩ	½	510163	BTS-33K	Limiter Grid

* Items R72A, R72B, R72C, C73A, C73B, C73C and C73D are combined into one unit.
Note 1. Some models use 47KΩ resistor in this application.
Note 2. Some models use 270KΩ resistor in this application.
Note 3. Some models use series resistors in this application to obtain desired value.
Note 4. Some models use 82Ω resistor in this application.
Note 5. Some models use 8200Ω resistor in this application.
Note 6. Some models use 68000Ω resistor in this application.
Note 7. Some models use 4700Ω resistor in this application.
Note 8. Some models use 5600Ω resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA Stewart-Warner PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC ② 2.1A	680VCT .230ADC	400VCT .075ADC	5VAC ② 3A 6SC-4 6.3VAC ② 10.4A	508702 509679 †			

† Used in Model 9122-A series "G" (Same as 508702 except has additional 6.3VAC winding for damper tube filament.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA Stewart-Warner PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	153Ω	940Ω	508076	A-8111 ②	A-3000 ②	TB0-1 ②	Vertical Block Osc. Trans
T3	420Ω Tap 44Ω	7.2Ω Tap 4.9Ω 6SC-2 0Ω	508679				Horizontal Output Trans.
T4	1.1KΩ Tap 13Ω		508956	A-8123	A-3037 ②		Vertical Output Trans.
T5A	13Ω		508675	DY-7	MDF-70		Horizontal Deflection Coil
B	48Ω						Vertical Deflection Coil
T6			509305 *				Focus Coil

② Drill one new mounting hole.
* Used in Model 9122-A.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA Stewart-Warner PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T7	6KΩ	3.5Ω	630Ω	.9Ω	505912	A-3823	A-3019	R0-9 ②	② Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS FIELD RES.	RATINGS V. C. IMP.	REPLACEMENT DATA Stewart-Warner PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1A	PM	3.5Ω	508174	6929	69A2	③ Used in model 9121-B
B	PM	3.5Ω	505512 ③	12212	12A4A	
	CONE DIA.	V. C. DIA.				
SP2A	6"X9"	9/16"				
B	11 7/8"	1"				

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA Stewart-Warner PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.230A	73Ω	2.9 Henries	508341	C-2325	C-2991 ②	TR3300 ②	② Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA Stewart-Warner PART No.	MEISSNER PART No.	IRC PART No.	NOTES
L2	Antenna Coil	0Ω	0Ω	507963			Channel # 13
L3	Fil. Choke	0Ω		507970			
L4	RF, Mixer Grid and Osc. Coil	0Ω		507983			Channel # 13
L5	Fil. Choke	0Ω		507971			
L6	1st Video IF	.8Ω		509061			
L7	Fil. Choke	0Ω		507584			
L8	Sound Atten. Trap	0Ω		509056			
L9	2nd Video IF	.1Ω		507343			
L10	3rd Video IF	.1Ω		507343			
L11	Fil. Choke	0Ω		507584			
L12	4th Video IF	.1Ω		507343			
L13	RF Choke	2.4Ω		507367			
L14	Fil. Choke	.22Ω		507587		CLA	.47 Microhenry Complete Assembly
L15	5th Video IF	.1Ω	2.2Ω	507591			1 Microhenry
L16	Fil. Choke	.8Ω		507586		CLA	
L17	Peaking	26Ω		507374			
L18	Peaking	26Ω		507374			Green Dot
L19	Peaking	4.5Ω		[illegible]			
L20	Peaking	5.5Ω		508070			
L21	1st Sound IF	1.9Ω	1.9Ω	508061			Red Dot
L22	RF Choke	15Ω		507373			
L23	2nd Sound IF	1.9Ω	1.9Ω	508061			1 Microhenry
L24	Fil. Choke	.8Ω		507586		CLA	Tap .8Ω
L25	Disc. Trans.	6Ω	.1Ω	507321			Blue Dot
L26	RF Choke	15Ω		507373			
L27	Horiz. Hold	90Ω		508967			
L28	Horiz. Width	26Ω	40Ω	508667			
L29	Damping Coil	50Ω		509615			
L30	Horiz. Lin.	4Ω		162190			

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA STEWART-WARNER PART No. FUSE	STEWART-WARNER PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	REMARKS
M1	3AG	.250	508713	508174	312.250	155020	④ Used when letter "D" is included in series designation at rear of chassis.
M2	3AG	1 Amp. PigTail	509517 ④		318001		

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA Stewart-Warner PART No.	NOTES
M3	Bayonet	6-8	.15	Brown	118921	Type No. 47 (TV)
M4	Bayonet	6-8	.15	Brown	118921	Type No. 47 (AM-FM)
M5	Bayonet	6-8	.15	Brown	118921	Type No. 47 (On-Off)

MISCELLANEOUS

ITEM No.	PART NAME	Stewart-Warner PART No.	NOTES
M6	RF Tuner	508890	
M7	Switch	509075	Function Selector Assembly (Complete-Includes Volume Control)
M8	Focus Magnet	509595	
M9	Ion Trap	508603	
B1	Trimmer	508071	Horizontal Drive (10-160MMF)
	Trimmer	508324	Built-In Antenna Tuning (4-70MMF)
	Antenna Coil	507952	Channel 2
		507953	Channel 3
		507954	Channel 4
		507955	Channel 5
		507956	Channel 6
		507957	Channel 7
		507958	Channel 8
		507959	Channel 9
		507960	Channel 10
		507961	Channel 11
		507962	Channel 12
	RF, Mixer Grid and Osc. Coil	507972	Channel 2
		507973	Channel 3
		507974	Channel 4
		507975	Channel 5
		507976	Channel 6
		507977	Channel 7
		507978	Channel 8
		507979	Channel 9
		507980	Channel 10
		507981	Channel 11
		507982	Channel 12
	Knob	509011	AM-FM Coarse Tuning And Dial Scale
	Knob	509102	AM-FM Fine Tuning
	Knob	502563	Built-In Antenna
	Knob	509101	Channel Selector
	Knob	508209	Contrast
	Knob	509109	TV Fine Tuning
	Knob	509107	Tone
	Knob	508208	TV Phono AM-FM
	Knob	509106	On/Off Volume

RADIO PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: Stewart-Warner PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V27	FM RF Amplifier - FM Mixer	12AT7	12AT7	9A	
V28	FM Oscillator - AM Converter	6BE6	6BE6	7CH	
V29	1st FM-AM IF Amp.	6BA6	6BA6	7BK	
V30	2nd FM IF Amp. - AM Detector-AVC	6BA6	6BA6	7BK	
V31	Ratio Detector -AVC	6AL5	6AL5	6BT	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: Stewart-Warner PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C97	3	50	507946	PRS150/4		BR415		TVA-1303	Stabilizing Cap
C98	10		513023	SII0	D6-100	5W5Q1	GP1K-10	19C19	FM Ant. Coupling
C99	1000		513009	SII000	D6-102	1W5D1	GP2L-102	19C1	FM RF Amp. Grid
C100	1000		513009	SII000	D6-102	1W5D1	GP2L-102	19C1	FM RF Amp. Fil.
C101	330		513007	SI330	D6-331	5W5T3	GP2K-330	19C14	RF Coupling
C102	1000		513009	SII000	D6-102	1W5D1	GP2L-102	19C1	RF Coupling
C103	1		513000		TCZ-1				Osc. Coupling
C104	47		513002	SI47	D6-470	5W5Q5	GP1K-47	19C25	FM Osc. Grid Cap
C105	47		513002	SI47	D6-470	5W5Q5	GP1K-47	19C25	FM Osc. Grid Cap
C106	2.5		513436						Osc. Feedback
C107	2.2		513001		TCZ-2.2				FM Osc. Feedback
C108	5000		513013	BPD-005	DD-502	1D5D5	811-005	29C1	AM Conv.-FM Osc. Dec.
C109	1000		513009	SII000	D6-102	1W5D1	GP2L-102	19C1	AM Conv.-FM Osc. Fil.
C110	5000		513013	BPD-005	DD-502	1D5D5	811-005	29C1	1st IF Amp. Decoupling
C111	5000		513013	BPD-005	DD-502	1D5D5	811-005	29C1	1st IF Amp. Fil.
C112	5000		513013	BPD-005	DD-502	1D5D5	811-005	29C1	RF Bypass
C113A	100		†506338	SII00	PC50 †	5W5T1	GP1K-100	19C11	AM Det. RF Filter
B	100			SII00		5W5T1	GP1K-100	19C11	AM Det. RF Filter
C114	5000		513013	BPD-005	DD-502	1D5D5	811-005	29C1	AVC Filter
C115	.05	400	512028	P488-05	DF-503	PTE4S5		4TM-S5	AVC Filter
C116	5000		513013	BPD-005	DD-502	1D5D5	811-005	29C1	FM IF Amp. Decoupling
C117	5000		513013	BPD-005	DD-502	1D5D5	811-005	29C1	FM IF Amp. Fil.
C118	330		513007	SI330	D6-331	5W5T3	GP2K-330	19C14	RF Bypass
C119	330		513007	SI330	D6-331	5W5T3	GP2K-330	19C14	Diode Load Cap
C120	.001	400	512103	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	De-emphasis
C121	5000		513013	BPD-005	DD-502	1D5D5	811-005	29C1	Ratio Det. Fil.

† Items C113A, C113B and R119 are included in one unit.

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: Stewart-Warner PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R108	100KΩ	½	510173		FM RF Amp. Grid
R109	2.2Meg	½	510193		FM Mixer Grid
R110	6800Ω	½	510152	BTS-6800	Decoupling
R111	10KΩ	½	510155		FM Osc. Grid
R112	4700Ω	1	510249	BTA-4700	Decoupling
R113	3300Ω	½	510146	BTS-3300	1st IF Amp. Decoupling
R114	3300Ω	1	510246	BTA-3300	Decoupling
R115	1500Ω	1	510240	BTA-1500	2nd FM IF Amp. Decoupling
R116	10KΩ	½	510155	BTS-10K	Ratio Det. Diode Load
R117	10KΩ	½	510155	BTS-10K	Ratio Det. Diode Load
R118	220Ω	½	510125	BTS-220	Balancing
R119	18KΩ	½	510159	BTS-18K	De-emphasis
R120	47KΩ	½	506338 †	BTS-47K	Diode Filter
R121	470KΩ	½	510185	BTS-470K	Diode Load
R122	2.2Meg	½	510193	BTS-2.2Meg	AVC Network

† Items R119, C113A and C113B are combined into one unit.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: Stewart-Warner PART No.	REPLACEMENT DATA: MEISSNER PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
L31	RF Choke	.8Ω		507586		CLA	1 Microhenry
L32	RF Choke	3Ω		507935		CLA	3.3 Microhenries
L33	FM RF Coil	0Ω		507941			
L34	FM Osc.	0Ω		507942			
L35	Loop Ant.	.3Ω		508212			
L36	AM Ant. Coil	.2Ω	2.2Ω	508184			
L37	AM Osc.	8Ω		508195			Tap .8Ω
L38	RF Choke	0Ω		506581			Wound on 1KΩ Resistor
L39	1st FM IF	.6Ω	.6Ω	506080			
L40	1st AM IF	24Ω	24Ω	505867			
L41	2nd FM IF	1.8Ω	.5Ω	505905			
L42	2nd AM IF	24Ω	24Ω	505867			
L43	Ratio Det. Trans.	1.8Ω	1Ω	508157			Tap @ 1Ω

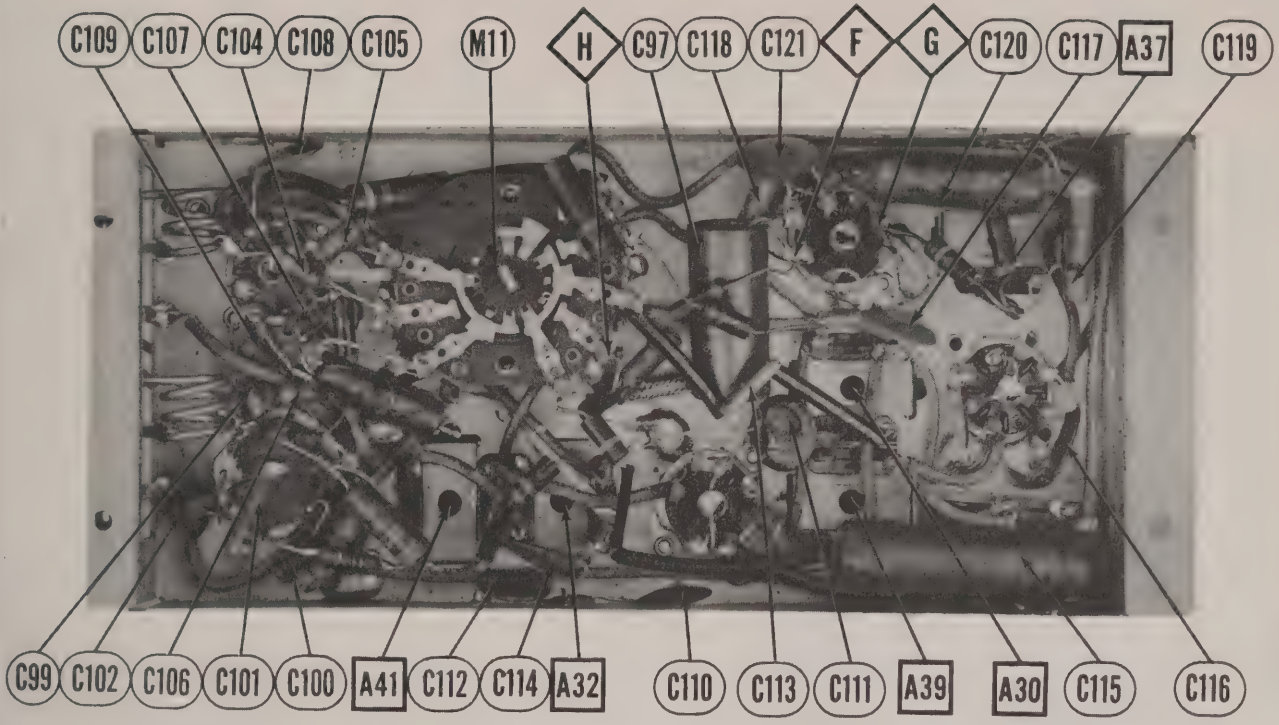
PHONO CARTRIDGE and NEEDLE

ITEM No.	REPLACEMENT DATA: Stewart-Warner PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	SHURE PART No. CARTRIDGE	SHURE PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	REMARKS
M10	509160	GC-AG-J	G-AG	WC36B	A56U	43	0-2 Or S-2	

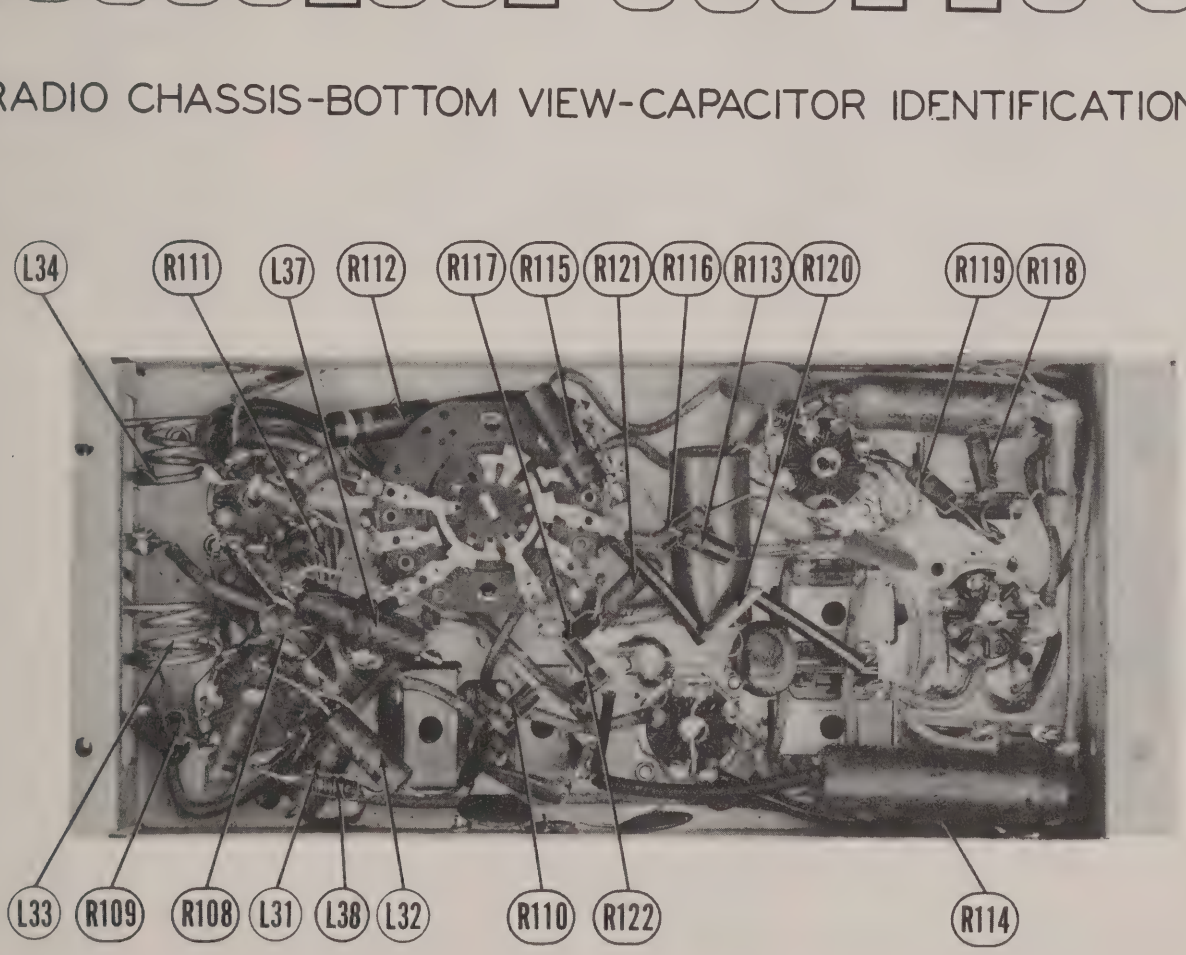
ASTATIC, SHURE AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED.

MISCELLANEOUS

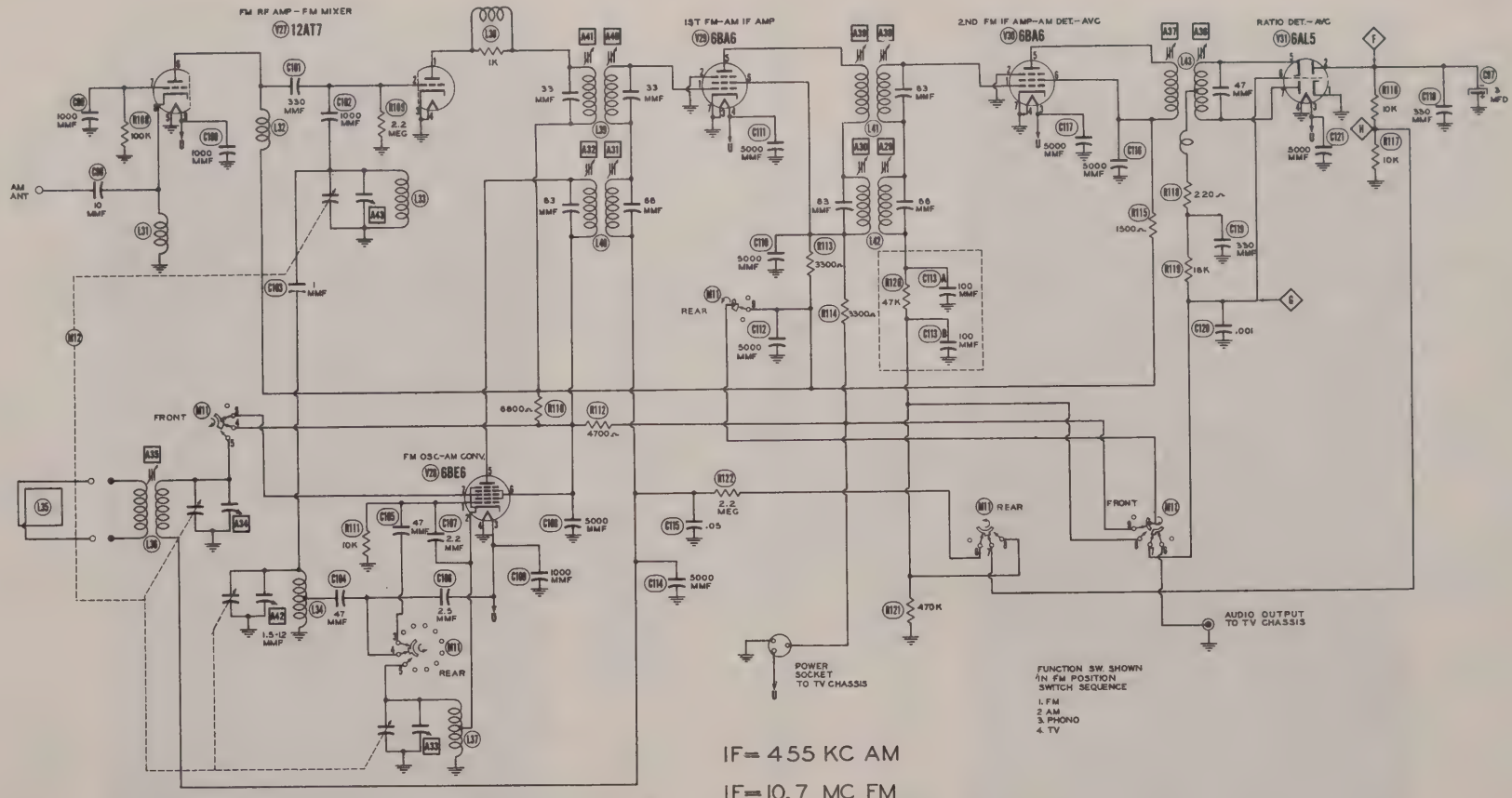
ITEM No.	PART NAME	Stewart-Warner PART No.	NOTES
M11	Switch	508753	AM-FM Band Switch
M12	Tuning Cap	508729	(26-560MMF, 29-212MMF)
A42	Trimmer	507940	FM Osc. Adjustment (1.5-12MMF)



RADIO CHASSIS-BOTTOM VIEW-CAPACITOR IDENTIFICATION



RADIO CHASSIS-BOTTOM VIEW-RESISTOR IDENTIFICATION



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 27	12AT7	≈.65VDC ≡140VDC	≈-.6VDC ≡-1.8VDC	0V	0V	0V	≈80VDC ≡140VDC	-.4VDC	0V	6.3VAC
V28	6BE6	≈-5.7VDC ≡-2.8VDC	0V	6.3VAC	0V	≈100VDC ≡80VDC	≈105VDC ≡100VDC	+.6VDC ≡100VDC		
V29	6BA6	≈-.5VDC ≡-.5VDC	0V	0V	6.3VAC	≈95VDC ≡105VDC	≈115VDC ≡105VDC	0V		
V30	6BA6	≈-.6VDC ≡-.5VDC	0V	6.3VAC	0V	≈70VDC ≡100VDC	≈70VDC ≡100VDC	0V		
V31	6AL5	0V	≈-.3VDC ≡-.6VDC	6.3VAC	0V	≈-.3VDC ≡-.2VDC	≈-.2VDC ≡-.2VDC	≈-.2VDC ≡-.2VDC		

≈ MEASURED IN AM POSITION
≡ MEASURED IN FM POSITION

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V27	12AT7	≈ 4.2KΩ ≡950Ω	3.2Meg	0Ω	0Ω	0Ω	≈ 4.2KΩ ≡950Ω	100KΩ	.7Ω	1Ω
V28	6BE6	10KΩ	.8Ω	1Ω	0Ω	≈ 4.7KΩ ≡4.2KΩ	≈ 4.7KΩ ≡4.2KΩ	≈2.6Meg ≡4.2KΩ		
V29	6BA6	≈2.6Meg ≡2.3Meg	0Ω	0Ω	1Ω	≈3.6KΩ ≡2.6KΩ	≈3.6KΩ ≡2.6KΩ	0Ω		
V30	6BA6	515KΩ	0Ω	1Ω	0Ω	≈ 7KΩ ≡2.6KΩ	≈ 7KΩ ≡2.6KΩ	0Ω		
V31	6AL5	0Ω	310KΩ	1Ω	0Ω	Inf.	Inf.	Inf.		

△ MEASURED FROM PIN 8 OF V34

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

STEWART-WARNER MODELS 9121-A, 9121-B

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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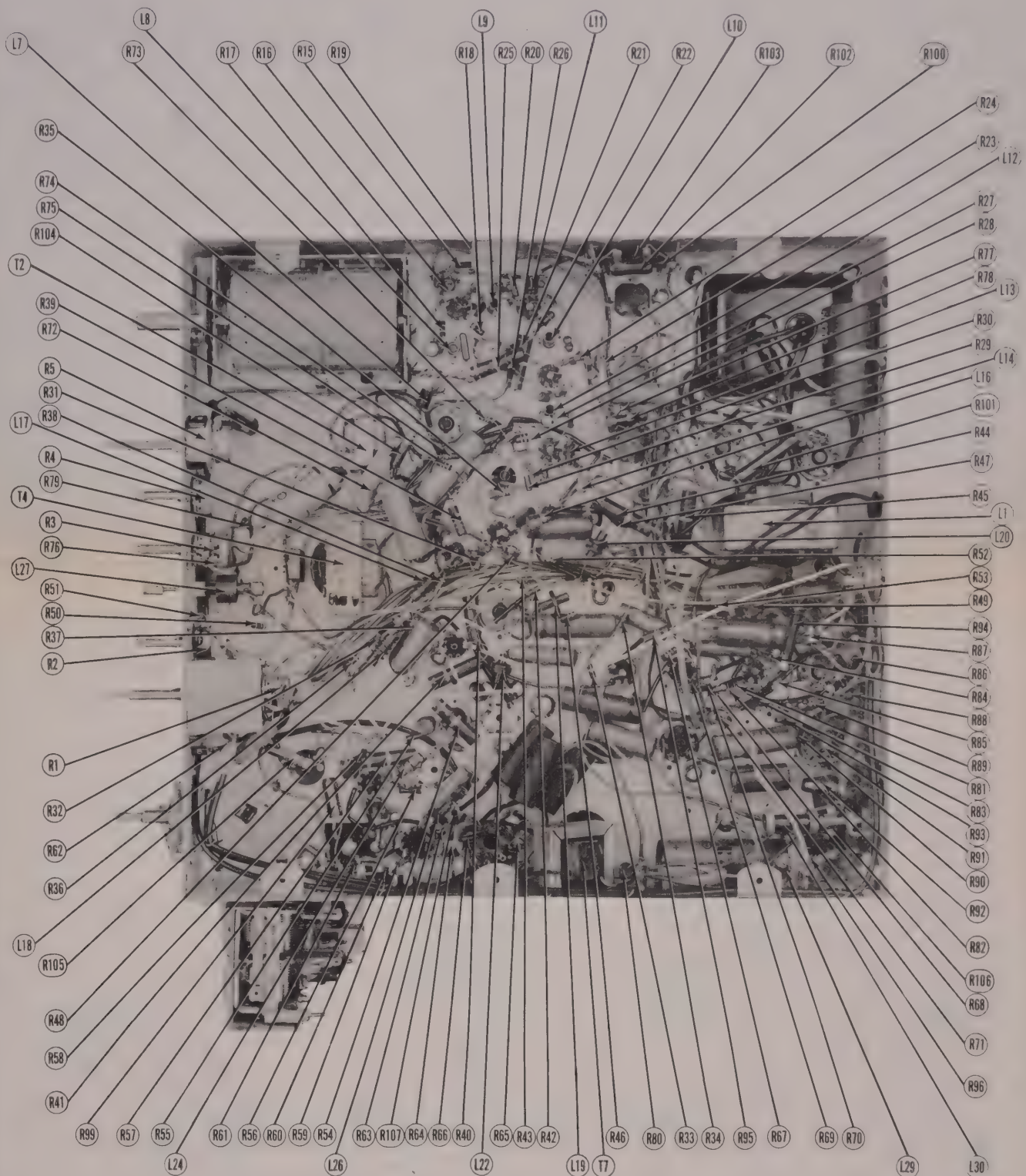
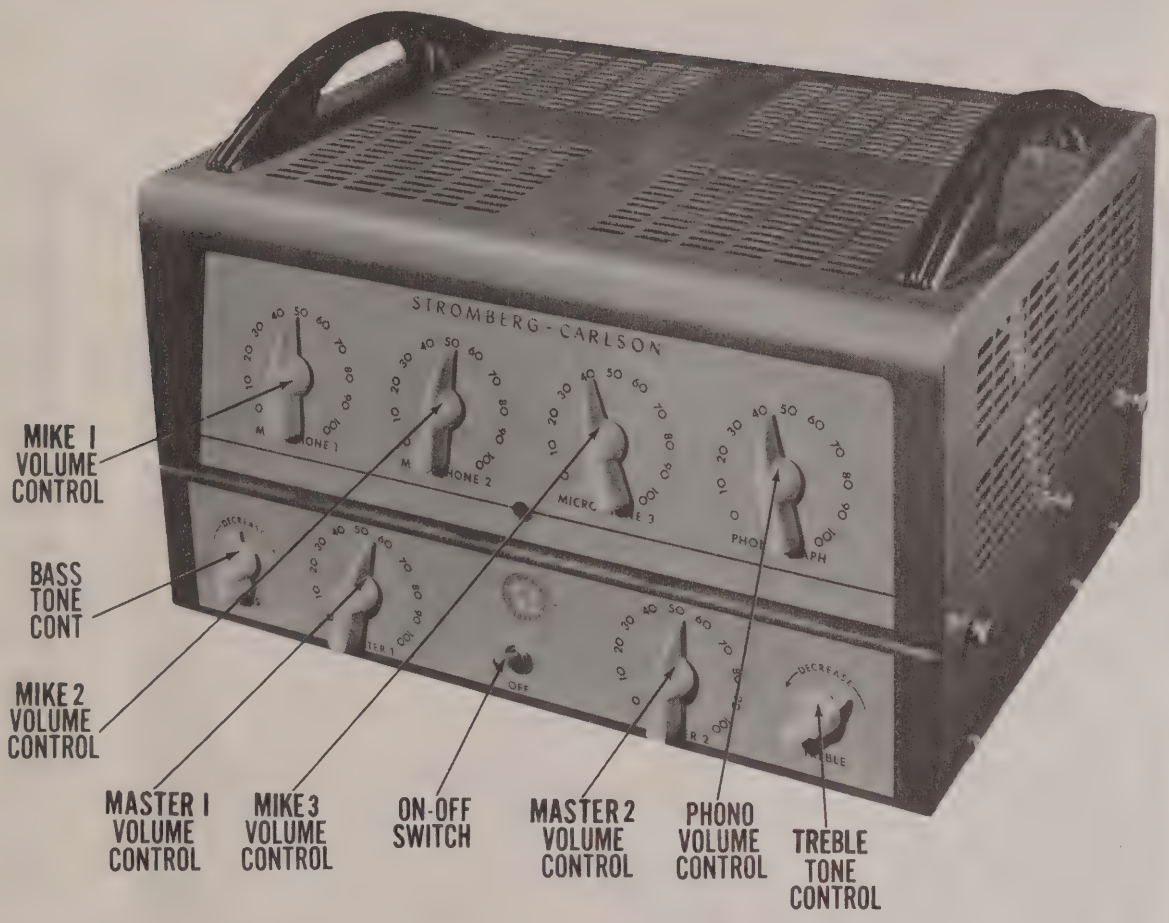
RADIO SCHEMATIC



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

STROMBERG-CARLSON
MODEL AU-35



STROMBERG-CARLSON
MODEL AU-35

STROMBERG-CARLSON MODELS AU-35

TRADE NAME	Stromberg-Carlson, Model AU-35
MANUFACTURER	Stromberg-Carlson Co., 100 Carlson Rd., Rochester, New York
TYPE SET	AC Operated Audio Amplifier
TUBES (FOURTEEN)	Types (3) 6SJ7 Mic. 1, 2, and 3 Pre-Amp., 6SC7 Mixer, 6SC7 1st AF-Phase Inv., 6SC7 2nd AF-Phase Inv., (2) 6N7GT Driver, (4) 6L6G Power Output, (2) 5U4G Rectifier
POWER SUPPLY	105-125 Volts AC RATING 2.3 Amp. @ 117 Volts AC

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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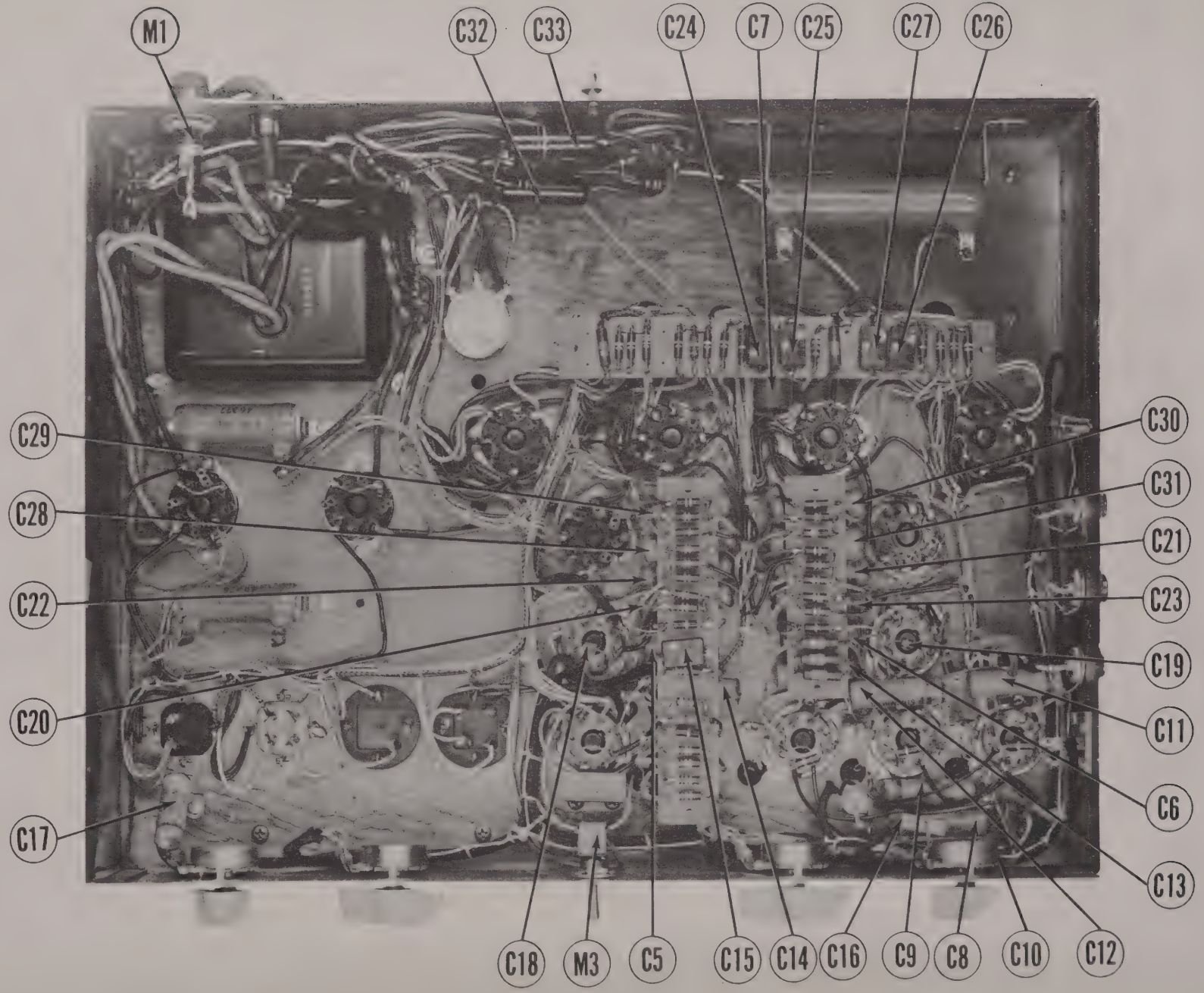
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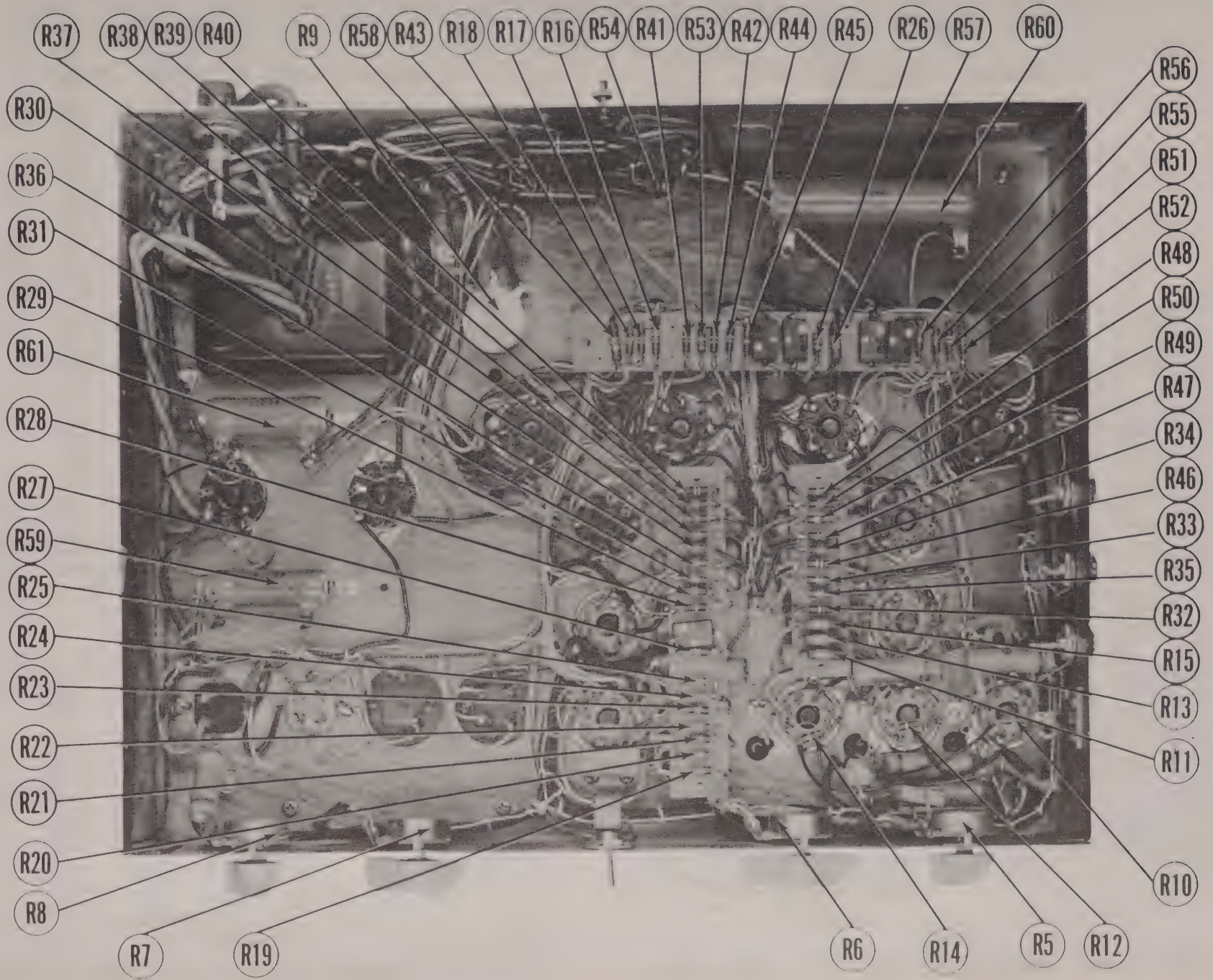
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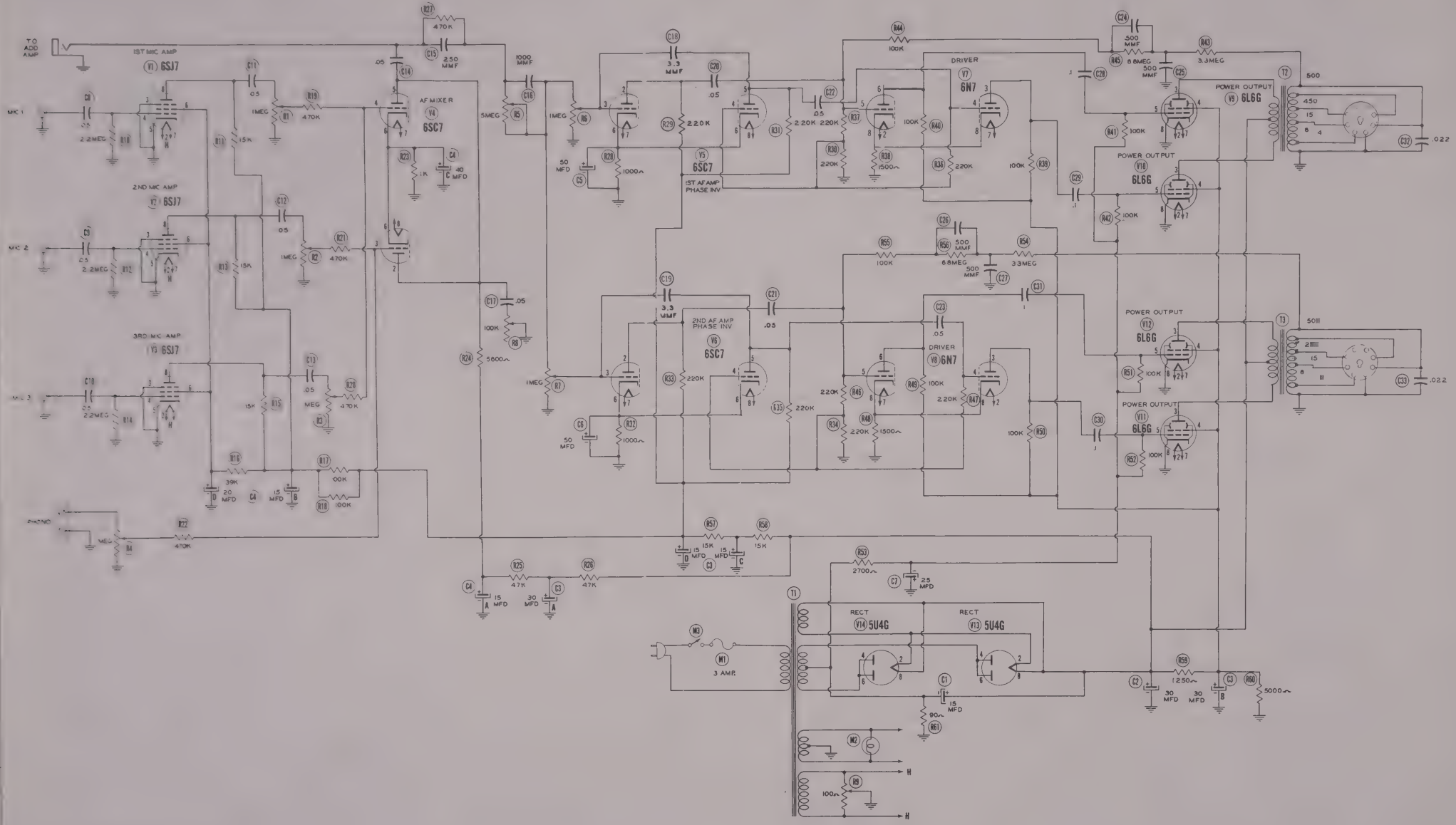

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VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SJ7	0V	¶	0V	-.7VDC	0V	30VDC	¶	45VDC
V 2	6SJ7	0V	¶	0V	-.7VDC	0V	30VDC	¶	45VDC
V 3	6SJ7	0V	¶	0V	-.7VDC	0V	30VDC	¶	45VDC
V 4	6SC7	0V	170VDC	0V	0V	170VDC	2VDC	¶	¶
V 5	6SC7	0V	90VDC	0V	0V	90VDC	1VDC	¶	¶
V 6	6SC7	0V	90VDC	0V	0V	90VDC	1VDC	¶	¶
V 7	6N7	0V	¶	170VDC	0V	0V	170VDC	¶	4VDC
V 8	6N7	0V	¶	170VDC	0V	0V	170VDC	¶	4VDC
V 9	6L6G	0V	¶	375VDC	295VDC	-25VDC	0V	¶	0V
V 10	6L6G	0V	¶	375VDC	295VDC	-25VDC	-25VDC	¶	0V
V 11	6L6G	0V	¶	375VDC	295VDC	-25VDC	-25VDC	¶	0V
V 12	6L6G	0V	¶	375VDC	295VDC	-25VDC	0V	¶	0V
V 13	5U4G	0V	380VDC	0V	340VAC	0V	340VAC	0V	380VDC
V 14	5U4G	0V	380VDC	0V	340VAC	0V	340VAC	0V	

¶ 6.3VAC MEASURED ACROSS FILAMENTS

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SJ7	0Ω	1Ω	0Ω	2.2Meg	0Ω	†60KΩ	1Ω	†60KΩ
V 2	6SJ7	0Ω	1Ω	0Ω	2.2Meg	0Ω	†60KΩ	1Ω	†60KΩ
V 3	6SJ7	0Ω	1Ω	0Ω	2.2Meg	0Ω	†60KΩ	1Ω	†60KΩ
V 4	6SC7	0Ω	†60KΩ	235KΩ	235KΩ	†60KΩ	1KΩ	.2Ω	.2Ω
V 5	6SC7	0Ω	†250KΩ	0Ω	220KΩ	†250KΩ	1KΩ	.2Ω	.2Ω
V 6	6SC7	0Ω	†250KΩ	0Ω	220KΩ	†250KΩ	1KΩ	.2Ω	.2Ω
V 7	6N7	0Ω	.2Ω	†100KΩ	440KΩ	440KΩ	†100KΩ	.2Ω	1.5KΩ
V 8	6N7	0Ω	.2Ω	†100KΩ	440KΩ	440KΩ	†100KΩ	.2Ω	1.5KΩ
V 9	6L6G	0Ω	.2Ω	†65Ω	†1.2KΩ	100KΩ	Inf.	.2Ω	0Ω
V 10	6L6G	0Ω	.2Ω	†65Ω	†1.2KΩ	100KΩ	100KΩ	.2Ω	0Ω
V 11	6L6G	0Ω	.2Ω	†65Ω	†1.2KΩ	100KΩ	100KΩ	.2Ω	0Ω
V 12	6L6G	0Ω	.2Ω	†65Ω	†1.2KΩ	100KΩ	Inf.	.2Ω	0Ω
V 13	5U4G	Inf.	6KΩ	Inf.	100Ω	Inf.	100Ω	Inf.	6KΩ
V 14	5U4G	Inf.	6KΩ	Inf.	100Ω	Inf.	100Ω	Inf.	6KΩ

† MEASURED FROM PIN 8 OF V14

1 - DC Voltage measurements are at 20,000 per volt: AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
¶ - All controls at minimum, proper output load connected.

PHOTOFACT* Folder

*TRADE MARK

STROMBERG-CARLSON
MODEL 24 Series

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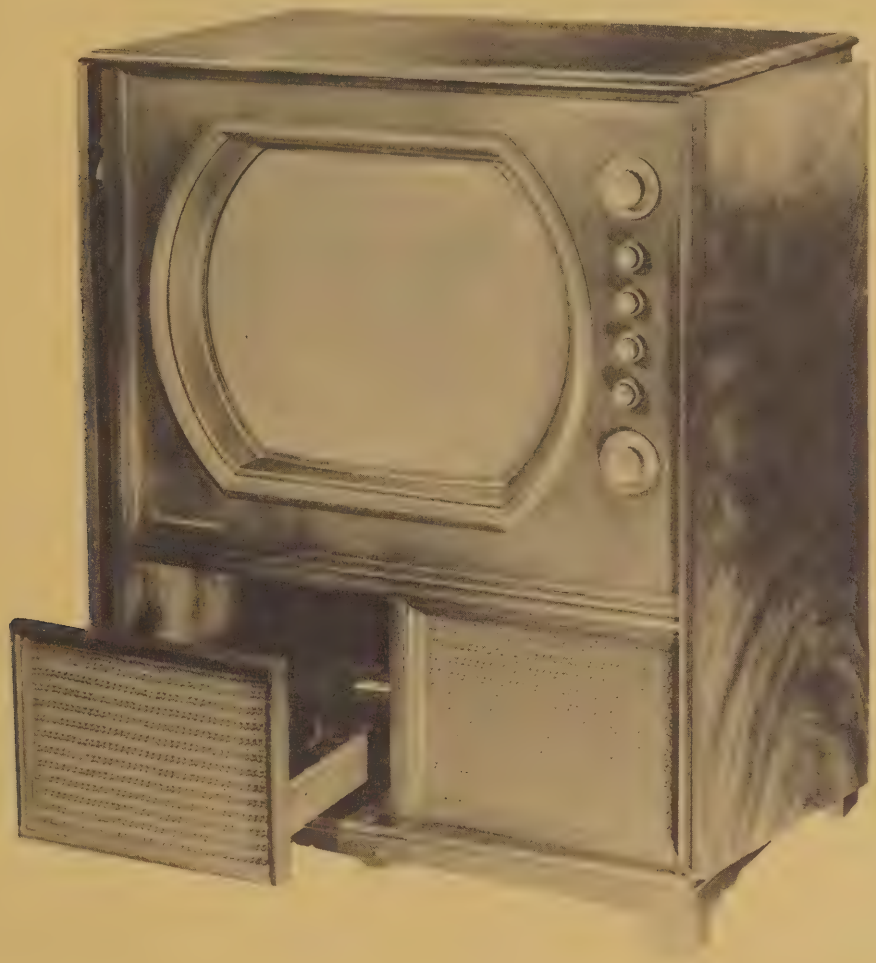

MODEL 24RP

STROMBERG-CARLSON
MODEL 24 Series

HOWARD W. SAMS & CO., INC. • Indianapolis, Indiana

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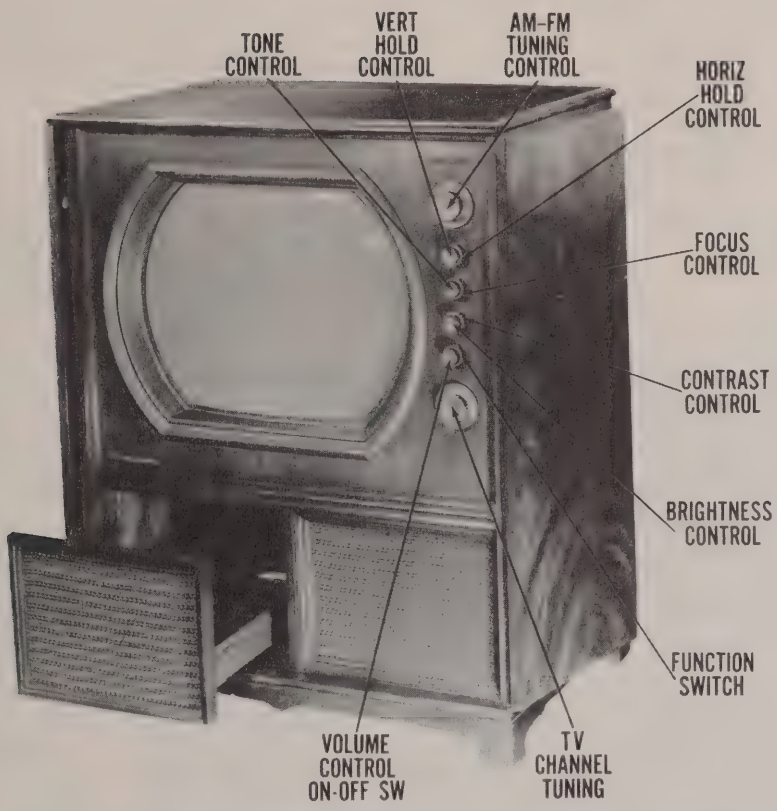
DATE 7-51 SET 138 FOLDER 11



STROMBERG-CARLSON MODEL 24RP

TRADE NAME	Stromberg-Carlson, Models 24C, 24RP (24 Series)
MANUFACTURER	Stromberg-Carlson Co., 100 Carson Rd., Rochester (3), New York
TYPE SET	TV-AM-FM-Phono Combination Receiver (Model 24C "TV" Only)
TUBES	Thirty Eight (Model 24RP) Thirty (Model 24C)
POWER SUPPLY	110-120 Volts AC - 60 Cycle — RATING 2.9 Amp. @ 117 Volts AC (TV)
TUNING RANGE	TV - Channel 2 thru 13 AM - 535-1650KC FM - 88-108MC

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FOR SERVICE INFORMATION ON RECORD CHANGER UNIT - SEE WEBSTER-CHICAGO, MODEL 100 - PHOTOFACT SET 135 FOLDER 14.

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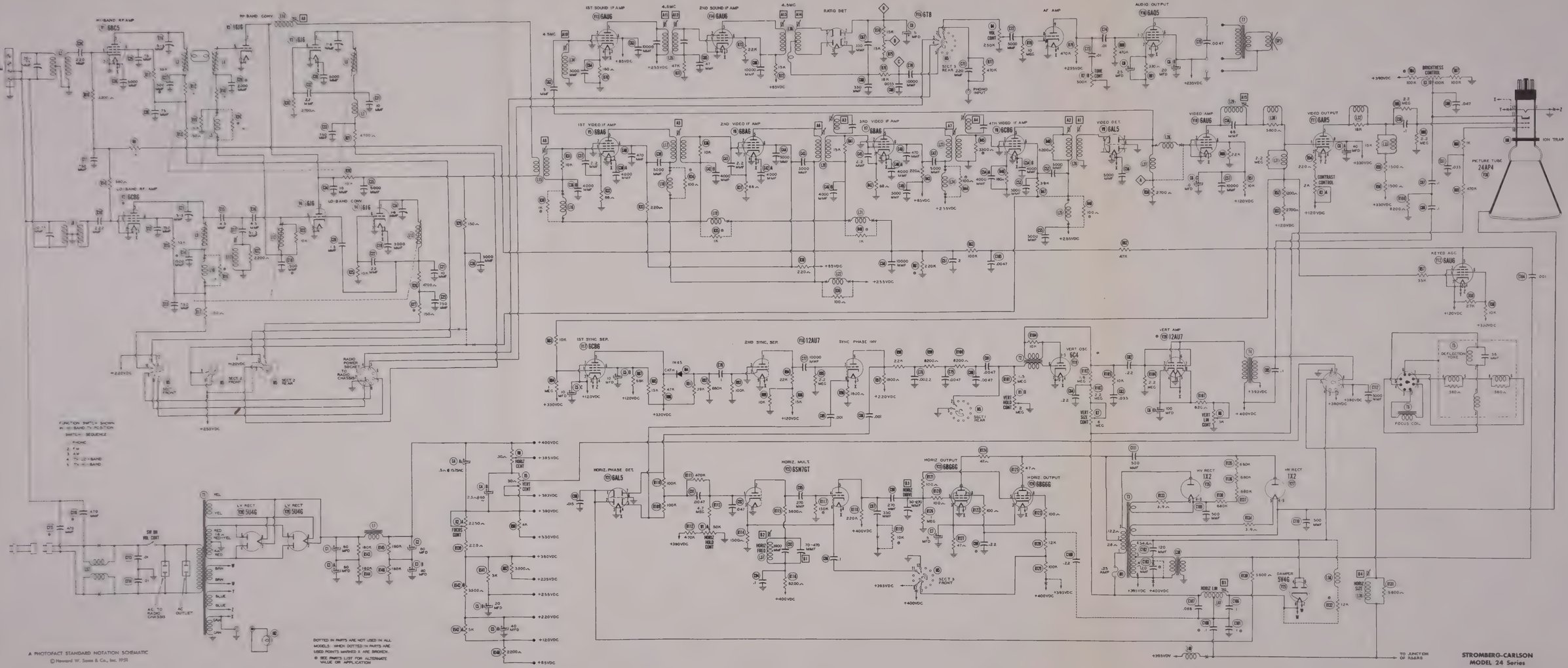
STROMBERG-CARLSON
MODEL 24 Series


HI-BAND RF AMP
HI-BAND CONV.
1ST SOUND IF AMP
4.5MC
2ND SOUND IF AMP
RATIO DET.
AF AMP
AUDIO OUTPUT
1ST VIDEO IF AMP
2ND VIDEO IF AMP
3RD VIDEO IF AMP
4TH VIDEO IF AMP
VIDEO DET.
VIDEO AMP
VIDEO OUTPUT
BRIGHTNESS CONTROL
ION TRAP
PICTURE TUBE 24AP4
CONTRAST CONTROL
KEYED AGC
LO-BAND RF AMP
LO-BAND CONV.
1ST SYNC SEP.
2ND SYNC. SEP.
SYNC PHASE INV.
VERT. OSC.
VERT. AMP.
DEFLECTION YOKE
FOCUS COIL
HORIZ. PHASE DET.
HORIZ. MULT.
HORIZ. OUTPUT
HV RECT.
DAMPER
LV RECT.
FUNCTION SWITCH SHOWN IN HI-BAND TV POSITION
SWITCH SEQUENCE
PHONO
1. FM
2. AM
3. TV-LO-BAND
4. TV-HI-BAND
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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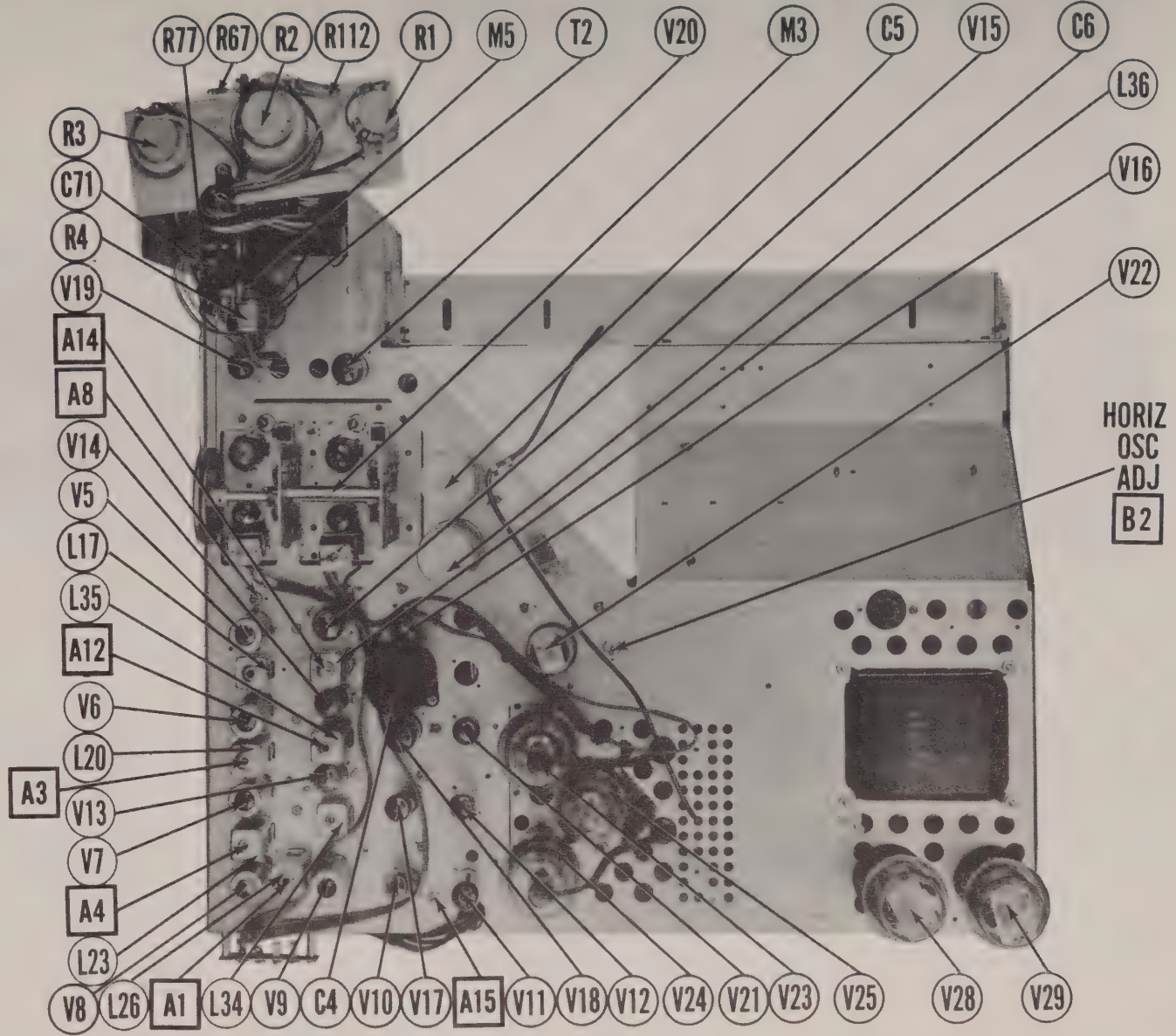
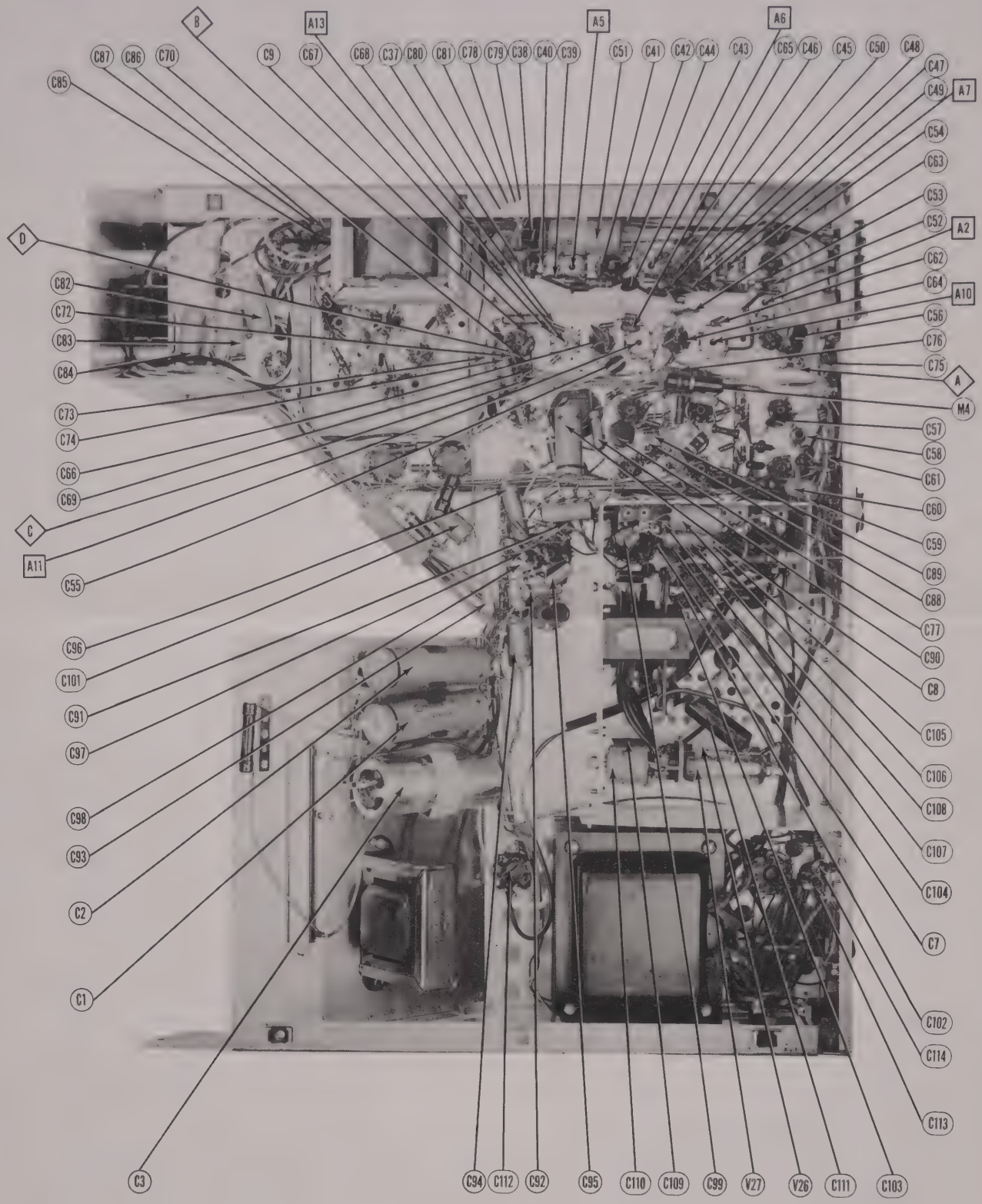
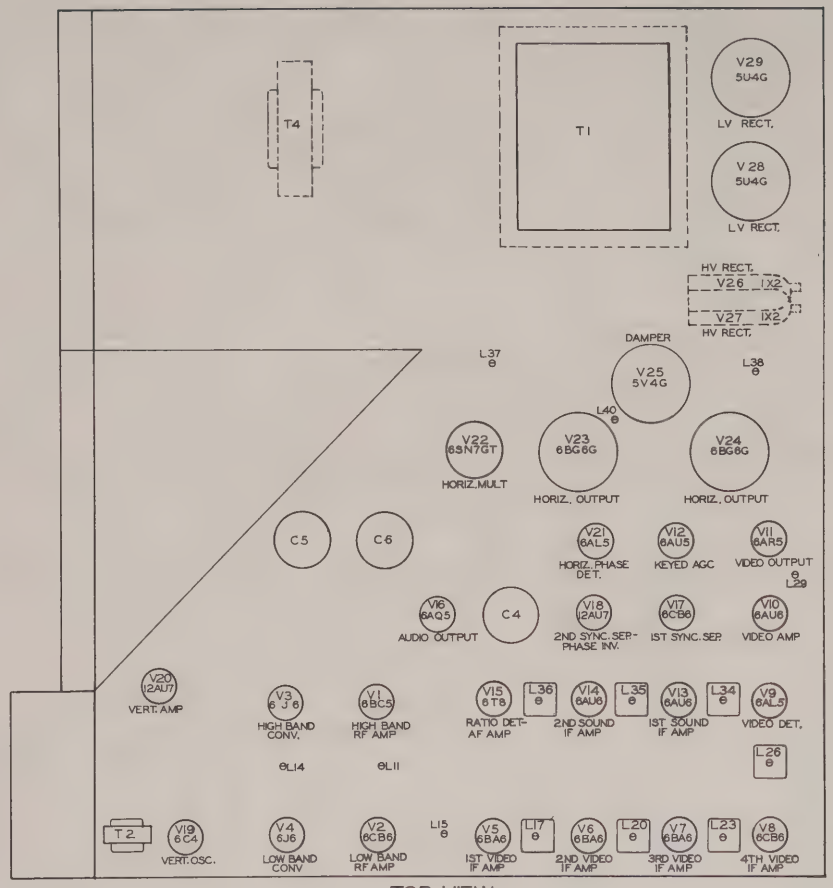
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
STROMBERG-CARLSON MODEL 24 Series



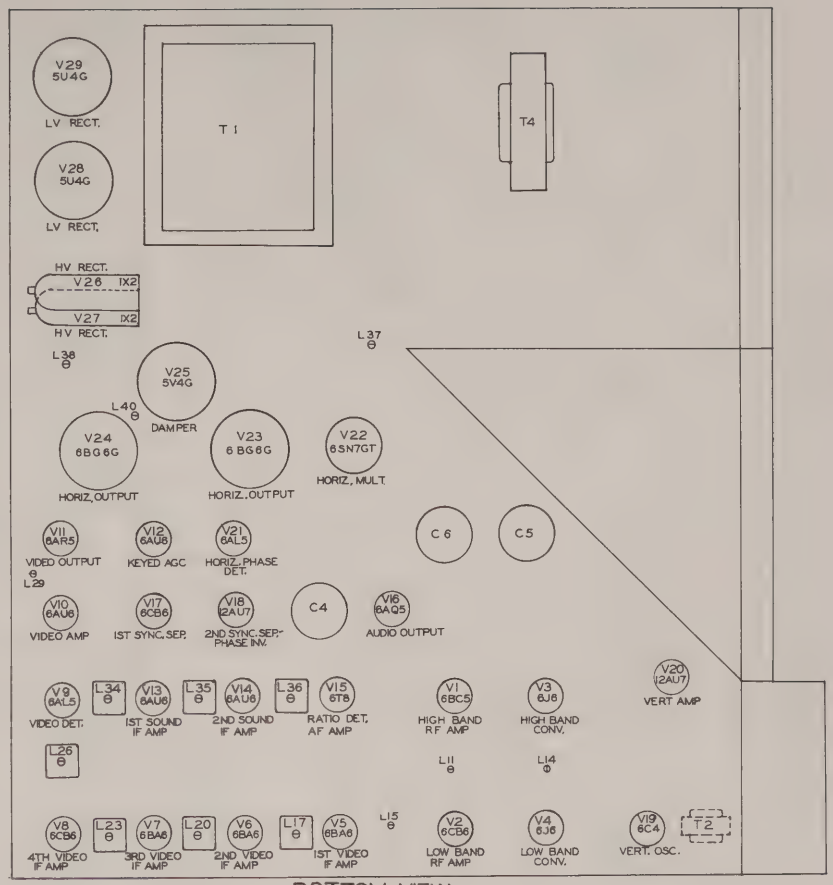
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



TOP VIEW



BOTTOM VIEW

TUBE PLACEMENT CHART

MODEL 24 Series

STROMBERG-CARLSON

TV ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal oscillator tube, (V22), from its socket.

VIDEO IF ALIGNMENT

Turn the function selector switch to "high band TV", (maximum clockwise).
Remove the high band converter tube, (V3), and replace it with a 6J6 which has Pin 1 removed. This will disable the local oscillator and prevent the possibility of erroneous indications.
Connect a 3 volt battery across C51, positive to chassis.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
Connect a 47KΩ decoupling resistor in series with the oscilloscope vertical input lead.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.01MFD	High side to Pin 1 (grid) of 6CB6, (V8). Low side to chassis.	24.5MC (10MC SWP)	22.7MC 26.4MC	Any	Vert. amp. thru 47KΩ to Point (A). Low side to chassis.	A1, A2	Adjust for response curve similar to figure 1 with markers at 90%.
2.	"	High side to Pin 1 (grid) of 6BA6, (V6). Low side to chassis.	Not used	21.9MC (400 ∿ Mod.)	"	"	A3	Adjust for MINIMUM 400 ∿ indication on scope.
3.	"	High side to Pin (grid) of 6BA6, (V7). Low side to chassis.	"	21.6MC (400 ∿ Mod.)	"	"	A4	"
4.	"	High side to Pin 1 (grid) of 6BA6, (V5). Low side to chassis.	24.5MC (Unmod.)	22.7MC 26.4MC	"	"	A5, A6, A7	Adjust for response curve similar to figure 2. A5 should be tuned near the high frequency end of the response, A6 near the center and A7 near the low frequency end.
5.	"	"	"	21.9MC	"	"		Turn the scope gain up to magnify the low frequency end of response curve. The 21.6MC trap is used primarily to reduce the "pop up" below 21.9MC. If necessary retouch A4 to equalize the peaks as shown in figure 3.
6.	Direct	High side to an unground-tube shield floating over dummy converter tube, (V3). Low side to chassis.	"	22.7MC 26.4MC	"	"	A8, A9	Adjust for response curve similar to figure 4.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7.	.01MFD	High side to Pin 2 (plate) of 6AL5, (V9). Low side to chassis.	4.5MC (Unmod.)	Any	DC probe to Point (B). Common to chassis.	A10, A11, A12, A13	Adjust for maximum deflection.
8.	"	"	"	"	DC probe to Point (C). Common to Point (D).	A14	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	.01MFD	High side to Pin 2 (plate) of 6AL5, (V9). Low side to chassis.	4.5MC (400 ∿ Mod.)	4.5MC	Any	Vert. amp. to Point (B). Low side to chassis.	A10, A11, A12, A13	Disconnect stabilizer capacitor C9. Adjust for maximum amplitude and symmetry as per figure 5.
8.	"	"	"	"	"	Vert. amp. to Point (C) Low side to chassis.	A14	Reconnect capacitor C9. Adjust A14 so 4.5MC occurs at center of crossover lines as per figure 6. SLIGHTLY retouch A13 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	.01MFD	High side to Pin 1 (grid) of 6AU6, (V10). Low side to chassis.	Not used	4.5MC (400 ∿ Mod.)	Any	Vert. amp. to Pin 2 of picture tube. Low side to chassis.	A15	Adjust for MINIMUM 400 ∿ indication on scope.

THE TUNER PORTIONS OF THESE RECEIVERS HAVE BEEN PROPERLY ALIGNED AT THE FACTORY AND ARE VERY STABLE. ALIGNMENT OF THESE PORTIONS SHOULD NOT BE REQUIRED IN THE FIELD.

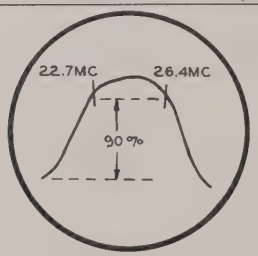


FIG.1

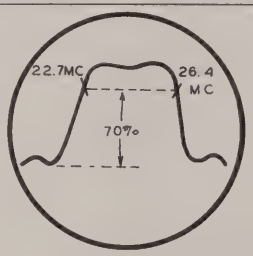


FIG.2

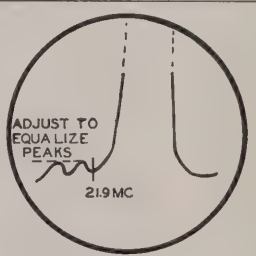


FIG.3

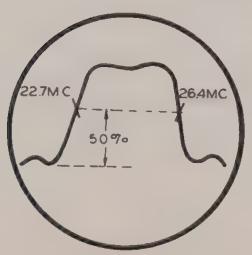


FIG.4

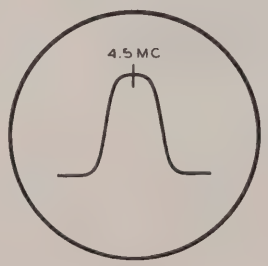


FIG. 5

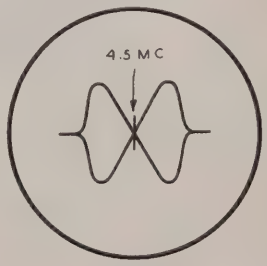


FIG. 6

RADIO ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial, turn tuning gang fully closed and set last reference mark on the low frequency end of dial to the index on cabinet.

AM ALIGNMENT

Turn the function selector switch to "AM", (third position clockwise).
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
10.	.01MFD	High side to Pin 7 (grid) of 6BE6, (V34). Low side to chassis.	455KC (400 ∿ Mod.)	AM (third position)	Tuning gang fully closed.	Across voice coil.	A16, A17, A18, A19	Adjust for maximum output.
11.		Loop	1650KC	"	Tuning gang fully open	"	A20, A21	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

After alignment is completed, and set is reassembled, tune in a weak station near 1500KC. Adjust loop trimmer, (A22), for maximum volume.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Turn the function selector switch to "FM", (second position clockwise).
Connect two matched 100KΩ (± 1%) resistors in series from Point ⟨E⟩ to chassis. The junction of these two resistors is alignment Point ⟨G⟩ as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
12.	.01MFD	High side to Pin 1 (grid) of 6BA6, (V35). Low side to chassis.	10.7MC (Unmod.)	FM (second position clockwise	Tuning gang fully closed	DC probe to Point ⟨E⟩. Common to chassis.	A23, A24, A25	Adjust for maximum deflection.
13.	"	High side to Pin 2 (grid) of 12AT7, (V33). Low side to chassis.	"	"	"	"	A26, A27	"
14.	"	"	"	"	"	DC probe to Point ⟨F⟩. Common to Point ⟨G⟩.	A28	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Turn the function selector switch to "FM", (second position clockwise).
Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
12.	.01MFD	High side to Pin 1 (grid) of 6BA6, (V35). Low side to chassis.	10.7MC (450KC SWP)	FM (Second position clockwise)	Point of non-interference.	Vert. amp. to Point ⟨E⟩. Low side to chassis.	A23, A24, A25	Disconnect stabilizer capacitor C117. Adjust for maximum amplitude and symmetry as per figure 7.
13.	"	High side to Pin 2 (grid) of 12AT7, (V33). Low side to chassis.	"	"	"	"	A26, A27	"
14.	"	"	"	"	"	Vert. amp. to Point ⟨F⟩. Low side to chassis.	A28	Reconnect capacitor C117. Adjust A28 so 10.7 MC occurs at center of crossover lines as per figure 8. SLIGHTLY retouch A23 for max. amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
15.	270Ω carbon resistors	High side thru 270Ω to ungrounded FM antenna terminal. Low side to chassis.	100MC (Unmod.)	FM	100MC	DC probe to Point ⟨E⟩. Common to chassis.	A29, A30, A31	Adjust for maximum deflection.

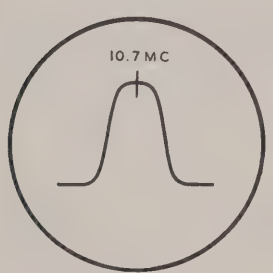


FIG. 7

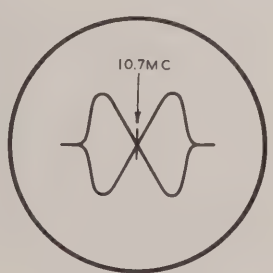


FIG. 8

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	-.6VDC	0V	6.3VAC	0V	▲210VDC	▲110VDC	0V		
V 2	6CB6	-.2VDC	0V	6.3VAC	0V	■215VDC	■105VDC	0V		
V 3	6J6	▲70VDC	110VDC	6.3VAC	0V	▲-1.8VDC ■-4.8VDC	§▲-6.5VDC §■-.3VDC	0V		
V 4	6J6	■70VDC	110VDC	6.3VAC	0V	▲-4.5VDC ■3.1VDC	§▲-.4VDC ■-8.5VDC	0V		
V 5	6BA6	-.6VDC	0V	6.3VAC	0V	255VDC	80VDC	.6VDC		
V 6	6BA6	-.6VDC	0V	6.3VAC	0V	255VDC	80VDC	.6VDC		
V 7	6BA6	-.6VDC	0V	6.3VAC	0V	255VDC	80VDC	.6VDC		
V 8	6CB6	0V	2.3VDC	6.3VAC	0V	260VDC	160VDC	0V		
V 9	6AL5	0V	-.4VDC	6.3VAC	0V	0V	0V	0V		
V 10	6AU6	-.6VDC	0V	6.3VAC	0V	100VDC	70VDC	0V		
V 11	6AR5	100VDC	130VDC	¶6.3VAC	¶6.3VAC	320VDC	330VDC	130VDC		
V 12	6AU6	100VDC	115VDC	¶6.3VAC	¶6.3VAC	-1.1VDC	265VDC	115VDC		
V 13	6AU6	0V	0V	6.3VAC	0V	255VDC	85VDC	1.3VDC		
V 14	6AU6	-.5VDC	0V	6.3VAC	0V	38VDC	40VDC	0V		
V 15	6T8	-.8VDC	-1.6VDC	-.8VDC	6.3VAC	0V	0V	0V	-1VDC	60VDC
V 16	6AQ5	13VDC	0V	6.3VAC	0V	230VDC	0V	0V		
V 17	6CB6	100VDC	115VDC	¶6.3VAC	¶6.3VAC	320VDC	270VDC	115VDC		
V 18	12AU7	35VDC	0V	12.5VDC	6.3VAC	6.3VAC	205VDC	0V	11VDC	0V
V 19	6C4	50VDC 100VDC	0V	0V	6.3VAC	50VDC 100VDC	-4.2VDC	0V		
V 20	12AU7	400VDC	0V	18VDC 28VDC	6.3VAC	6.3VAC	400VDC	0V	18VDC 28VDC	0V
V 21	6AL5	.1VDC	.1VDC	6.3VAC	0V	13VDC	0V	-7.2VDC		
V 22	6SN7GT	1.7VDC	275VDC	17VDC	-6VDC	135VDC	17VDC	0V	6.3VAC	
V 23	6BG6G	275VDC	0V	6.7VDC	-11VDC	-17VDC	6.7VDC	6.3VAC	270VDC	TOP CAP *
V 24	6BG6G	275VDC	0V	6.7VDC	-11VDC	-17VDC	0V	6.3VAC	270VDC	TOP CAP *
V 25	5V4G	0V	540VDC	0V	400VDC	0V	400VDC	0V	540VDC	
V 26	1X2	* DO NOT MEASURE								TOP CAP *
V 27	1X2	* DO NOT MEASURE								TOP CAP *
V 28	5U4G	0V	430VDC	0V	360VAC	0V	360VAC	0V	430VDC	
V 29	5U4G	0V	430VDC	0V	360VAC	0V	360VAC	0V	430VDC	
V 30	24AP4	¶ 6.3VAC	145VDC	PIN 10 430VDC	PIN 11 260VDC	PIN 12 ¶6.3VAC				

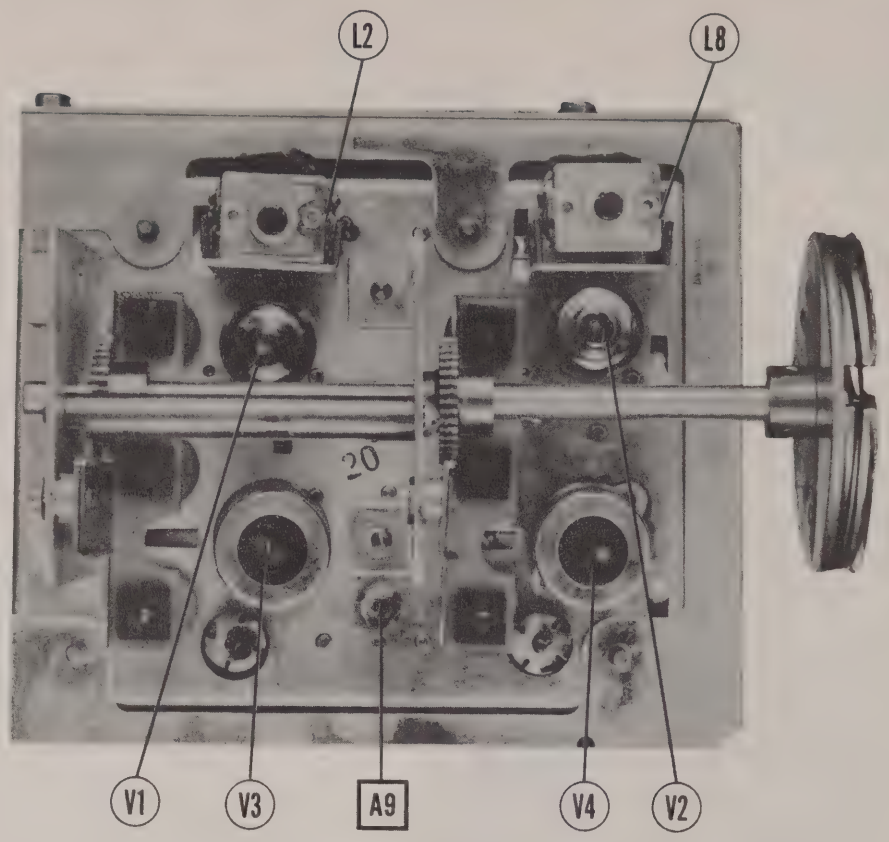
ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
■ MEASURED IN LOW-BAND SWITCH POSITION
▲ MEASURE IN HIGH-BAND SWITCH POSITION
§ TAKEN WITH VACUUM TUBE VOLTMETER
* DO NOT MEASURE
¶ MEASURE ACROSS FILAMENT
MEASUREMENTS TAKEN IN TV SWITCH POSITION

RESISTANCE READINGS

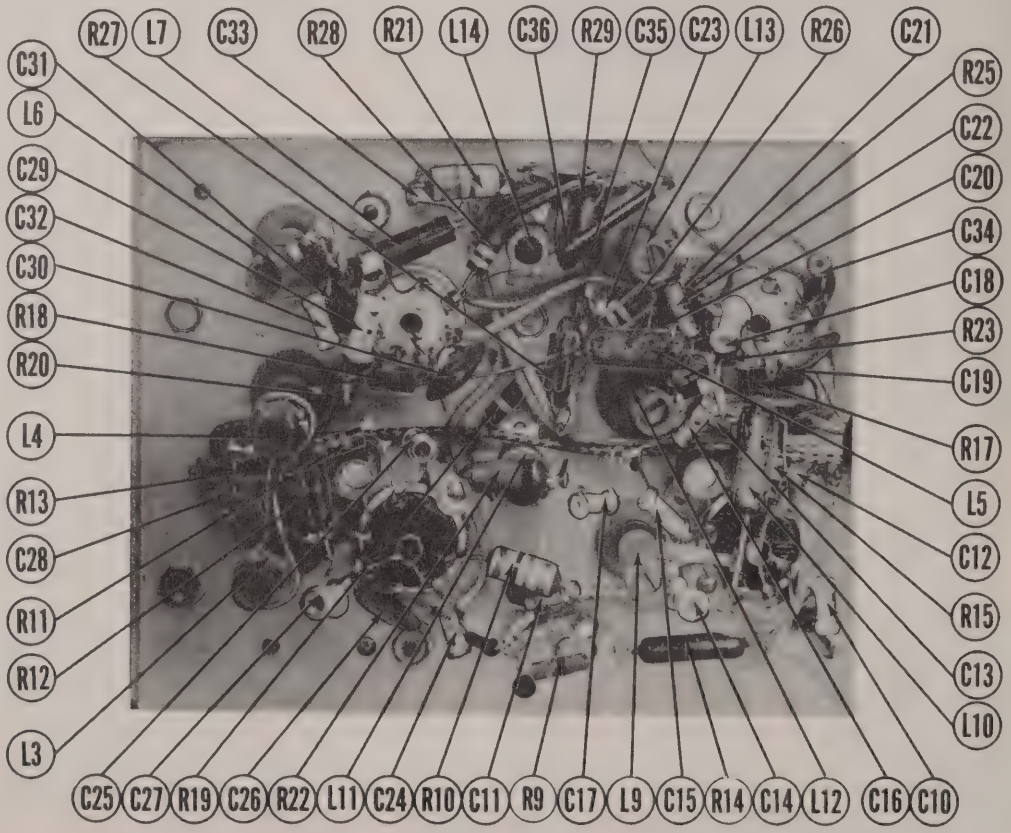
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	223KΩ	0Ω	.1Ω	0Ω	▲†4.6KΩ	▲†36KΩ	0Ω		
V 2	6CB6	220KΩ	0Ω	.1Ω	0Ω	■†3.5KΩ	■†36KΩ	0Ω		
V 3	6J6	▲†13KΩ	†6.2KΩ	.1Ω	0Ω	100KΩ	2.7KΩ	0Ω		
V 4	6J6	■†13KΩ	†6.2KΩ	.1Ω	0Ω	100KΩ	10KΩ	0Ω		
V 5	6BA6	220KΩ	0Ω	.1Ω	0Ω	†3.1KΩ	†9KΩ	68Ω		
V 6	6BA6	220KΩ	0Ω	.1Ω	0Ω	†3KΩ	†8.5KΩ	68Ω		
V 7	6BA6	220KΩ	0Ω	.1Ω	0Ω	†3KΩ	†9KΩ	68Ω		
V 8	6CB6	.4Ω	180Ω	.1Ω	0Ω	†3KΩ	†41KΩ	0Ω		
V 9	6AL5	Inf.	2.7KΩ	.1Ω	0Ω	.6Ω	0Ω	Inf.		
V 10	6AU6	2.7KΩ	0Ω	.1Ω	0Ω	†13KΩ	†13KΩ	0Ω		
V 11	6AR5	†13KΩ	9KΩ	†6KΩ	†6KΩ	†6.5KΩ	†3.6KΩ	9KΩ		
V 12	6AU6	†45KΩ	†6KΩ	†6KΩ	†6KΩ	365KΩ	†12KΩ	†6KΩ		
V 13	6AU6	2.5Ω	0Ω	.1Ω	0Ω	†3KΩ	†8KΩ	180Ω		
V 14	6AU6	47KΩ	0Ω	.1Ω	0Ω	†12KΩ	†12KΩ	0Ω		
V 15	6T8	Inf.	30KΩ	Inf.	.1Ω	0Ω	Inf.	0Ω	10Meg	†473KΩ
V 16	6AQ5	470KΩ	330Ω	.1Ω	0Ω	†3.9KΩ	†3.5KΩ	470KΩ		
V 17	6CB6	21KΩ	†6KΩ	†6KΩ	†6KΩ	†23KΩ	†17KΩ	†6KΩ		
V 18	12AU7	†30KΩ	0Ω	100KΩ	.1Ω	.1Ω	†5.3KΩ	2.2Meg	1.8KΩ	0Ω
V 19	6C4	10Meg #4Meg	Inf.	0Ω	.1Ω	10Meg #4Meg	1.5Meg	0Ω		
V 20	12AU7	†570Ω	2.2Meg	5.8KΩ 820Ω	.1Ω	.1Ω	†570Ω	2.2Meg	5.8KΩ 820Ω	0Ω
V 21	6AL5	5.6KΩ	5.6KΩ	0Ω	.1Ω	5.3Meg	0Ω	5.3Meg		
V 22	6SN7GT	4.7Meg	†14KΩ	1.5KΩ	150KΩ	†220KΩ	1.5KΩ	0Ω	.1Ω	
V 23	6BG6G	†12KΩ	0Ω	47Ω	1Meg	1Meg	47Ω	.1Ω	†13KΩ	TOP CAP #90Ω
V 24	6BG6G	†12KΩ	0Ω	47Ω	1Meg	1Meg	Inf.	.1Ω	†13KΩ	TOP CAP #90Ω
V 25	5V4G	Inf.	#.1Ω	Inf.	†65Ω	Inf.	†65Ω	Inf.	#0Ω	
V 26	1X2	PINS 1 THRU 9 INFINITE RESISTANCE								TOP CAP #150Ω
V 27	1X2	PINS 1 THRU 9 INFINITE RESISTANCE								TOP CAP #Inf.
V 28	5U4G	Inf.	12KΩ	Inf.	14Ω	Inf.	14Ω	Inf.	12KΩ	
V 29	5U4G	Inf.	12KΩ	Inf.	14Ω	Inf.	14Ω	Inf.	12KΩ	
V 30	24AP4	†6KΩ	1.1Meg	PIN 10 #470KΩ	PIN 11 50KΩ	PIN 12 †6KΩ				

ALL MEASUREMENTS ARE TAKEN WITH PICTURE TUBE REMOVED
MEASURED IN TV SWITCH POSITION
■ MEASURED IN LOW-BAND SWITCH POSITION
▲ MEASURED IN HIGH-BAND SWITCH POSITION
† MEASURED FROM PIN 2 OF V28
# MEASURED FROM PIN 8 OF V25

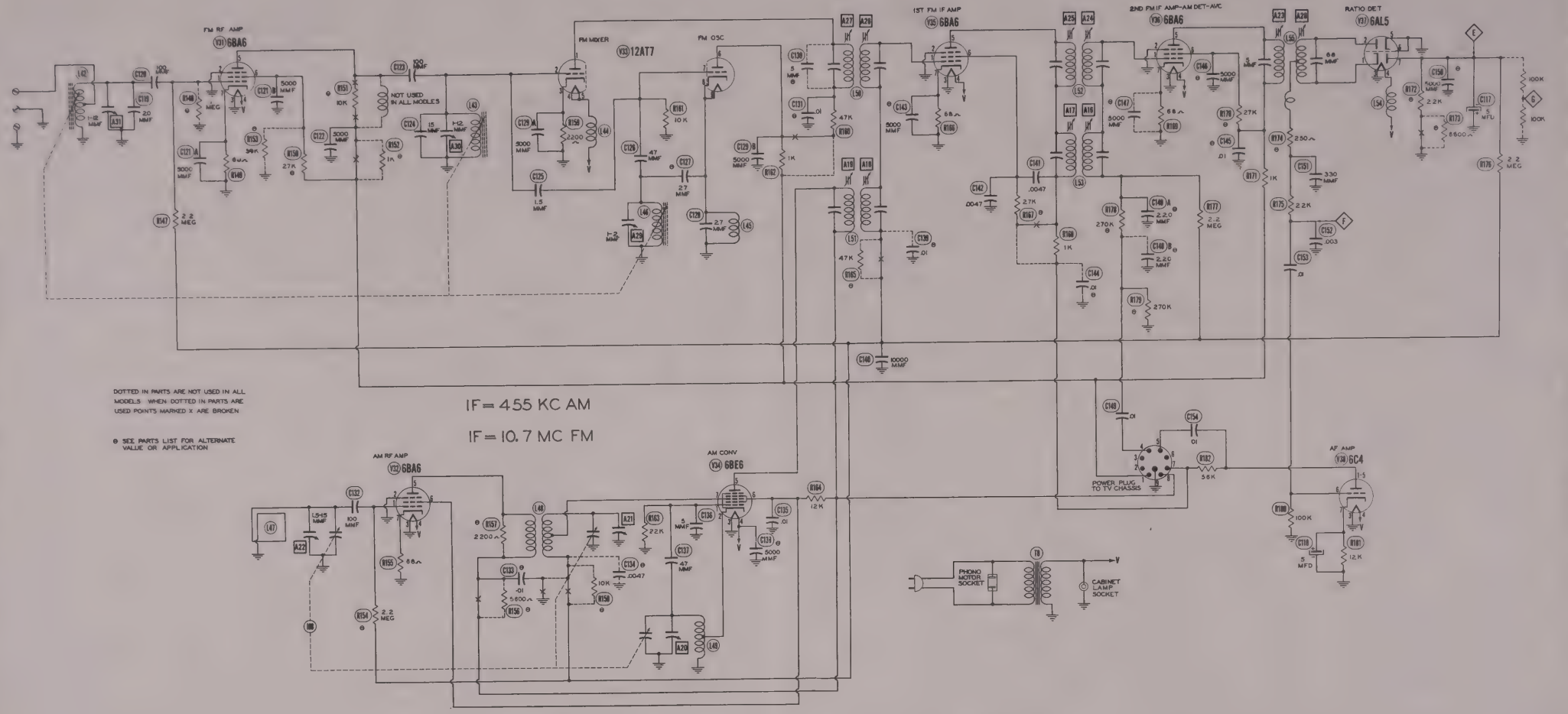
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



RF TUNER- TOP VIEW



RF TUNER-BOTTOM VIEW



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V31	6BA6	⌐-.2VDC	0V	0V	5.8VAC	⌐105VDC	⌐100VDC	⌐.6VDC		
V32	6BA6	⌐-.2VDC	0V	0V	5.8VAC	⌐125VDC	⌐90VDC	⌐.6VDC		
V33	12AT7	⌐.85VDC	⌐0V	⌐2.8VDC	5.8VAC	5.2VAC	⌐155VDC	⌐-3.8VDC	.2VAC	.2VAC
V34	6BE6	⌐-8.8VDC	⌐0V	0V	5.8VAC	⌐135VDC	⌐85VDC	⌐-.3VDC		
V35	6BA6	⌐-.1VDC ⌐-.8VDC	0V	0V	5.8VAC	⌐155VDC ⌐125VDC	⌐.85VDC ⌐90VDC	⌐ .7VDC ⌐ .7VDC		
V36	6BA6	⌐0V ⌐0V	0V	0V	5.8VAC	⌐0V ⌐0V	⌐155VDC ⌐-.8VDC	⌐.70VDC ⌐0V		
V37	6AL5	⌐-.1VDC	⌐1.2VDC	0V	6.3VAC	0V	0V	⌐0V		
V38	6C4	⌐125VDC	0V	0V	6.3VAC	⌐125VDC	⌐0V	⌐8.4VDC		

‡ TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V31	6BA6	5Meg	0Ω	0Ω	.4Ω	⌐114KΩ	⌐130KΩ	68Ω		
V32	[illegible]	5Meg	[illegible]	0Ω	.4Ω	⌐13.5KΩ	⌐15KΩ	68Ω		
V33	12AT7	⌐15KΩ	0Ω	2.2KΩ	1.6Ω	1.8Ω	⌐14.5KΩ	10KΩ	1.4Ω	1.4Ω
V34	6BE6	22KΩ	7.5Ω	0Ω	.4Ω	⌐13.5KΩ	⌐15KΩ	2.7Meg		
V35	6BA6	2.7Meg	0Ω	0Ω	.4Ω	14.7KΩ	13KΩ	68Ω		
V36	6BA6	54QKΩ	0Ω	0Ω	.2Ω	⌐14.7KΩ	⌐13KΩ	68Ω		
V37	6AL5	Inf.	Inf.	0Ω	.2Ω	0Ω	0Ω	19KΩ		
V38	6C4	⌐15QKΩ	[illegible]	0Ω	.2Ω	⌐15QKΩ	100KΩ	12KΩ		

ALL MEASUREMENTS TAKEN IN AM-FM SWITCH POSITION
+ MEASURED IN AM SWITCH POSITION
⌐ MEASURED IN FM SWITCH POSITION

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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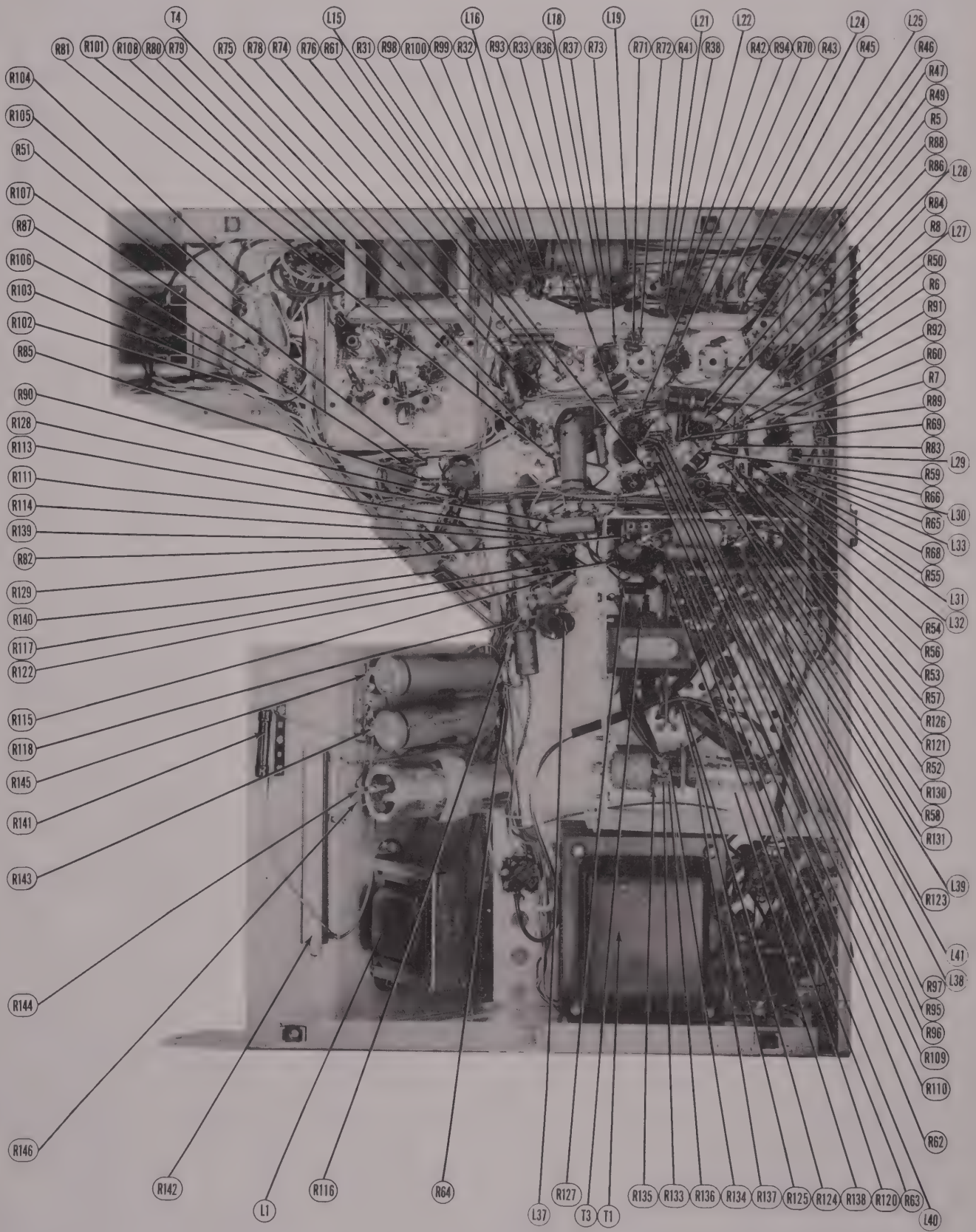
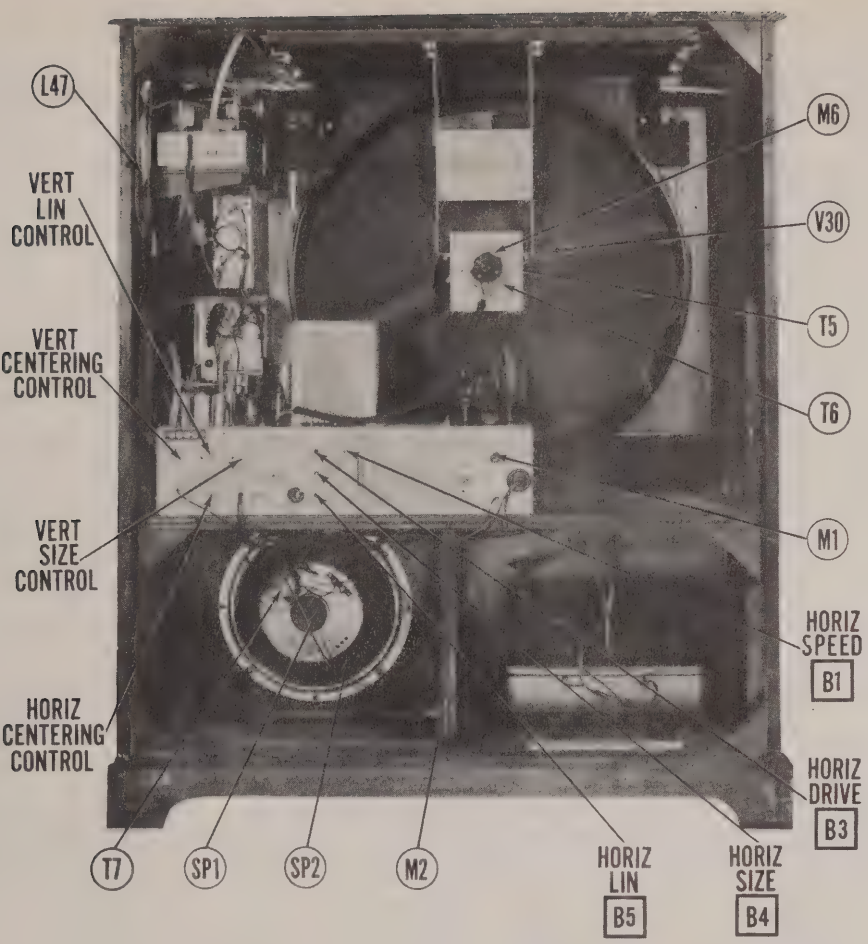
STROMBERG-CARLSON
MODEL 24 Series

RADIO SCHEMATIC



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.
Adjust the horizontal speed trimmer, (B1), until the picture synchronizes horizontally. If B1 shows insufficient range, turn it to the center of its range and adjust the horizontal oscillator coil, (B2), for synchronization.
Adjust the horizontal drive trimmer, (B3), counter-clockwise as far as possible without crowding, or vertical lines appearing in the picture.
Adjust the horizontal size slug, (B4), until the picture fills the mask horizontally.
Adjust the horizontal linearity slug, (B5), until the picture is symmetrical from left to right. Slight readjustment of B3 may be required for optimum results.

DISASSEMBLY INSTRUCTIONS

TV CHASSIS REMOVAL

1. Remove ten push-on type control knobs.
2. Remove ten wood screws from rear cover. Remove rear cover.
3. Disconnect speaker plug.
4. Disconnect picture tube socket.
5. Disconnect yoke cable.
6. Disconnect phono input power plug.
7. Disconnect phono audio input plug.
8. Disconnect radio power plug.
9. Disconnect phono-radio jack plug.
10. Disconnect HV lead.
11. Remove two metal screws holding the horizontal hold, vertical hold, focus, tone, brightness and contrast controls in place.
12. Remove four 7/16" hex head bolts securing chassis to cabinet. Remove chassis.
13. Remove four speed nuts from speaker. Remove speaker.

NOTE: FOR PICTURE TUBE REMOVAL, IT IS NECESSARY TO REMOVE THE CHASSIS AS OUTLINED ABOVE.

RADIO REMOVAL

1. Remove two push-on type control knobs.
2. Disconnect built-in AM-FM antenna.
3. Remove four 7/16" hex head bolts from chassis. Remove chassis.

TV PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		STROM-CARL PART No.	STANDARD REPLACEMENT		
V1	High Band RF Amp	162088	6BC5	7BD	
V2	Low Band RF Amp.	162092	6CB6	7CM	
V3	High Band Conv.	162084	6J6	7BF	
V4	Low Band Conv.	162084	6J6	7BF	
V5	1st. Video IF Amp.	162012	6BA6	7BK	
V6	2nd. Video IF Amp.	162012	6BA6	7BK	
V7	3rd. Video IF Amp.	162012	6BA6	7BK	
V8	4th. Video IF Amp.	162092	6CB6	7CM	
V9	Video Detector	162022	6AL5	6BT	
V10	Video Amplifier	162032	6AU6	7BK	
V11	Video Output	162086	6AR5	6CC	
V12	Keyed AGC	162032	6AU6	7BK	
V13	1st. Sound IF Amp.	162032	6AU6	7BK	
V14	2nd. Sound IF Amp.	162032	6AU6	7BK	
V15	Ratio Detector-AF Amplifier	162077	6T8	9E	
V16	Audio Output	162069	6AQ5	7BZ	
V17	1st. Sync. Sep.	162092	6CB6	7CM	
V18	2nd. Sync. Sep.-Sync. Phase Inv.	162042	12AU7	9A	
V19	Vertical Osc.	162030	6C4	6BG	
V20A	Vert. Amplifier	162042	12AU7	9A	
B	Vert. Amplifier		12BH7	9A	
V21	Horiz. Phase Det.	162022	6AL5	6BT	
V22	Horiz. Mult.	162018	6SN7GT	8BD	
V23	Horiz. Output.	162026	6BG6G	5BT	
V24	Horiz. Output	162066	6BG6G	5BT	
V25	Damper	162062	5V4G	5L	
V26	HV Rectifier	162090	1X2	7CB	
V27	HV Rectifier	162090	1X2	7CB	
V28	LV Rectifier	35758	5U4G	5T	
V29	LV Rectifier	35758	5U4G	5T	
V30	Picture Tube	162099	24AP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	STROM-CARL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1	80	300	111086	PRS450/40-40		UPT8030		TVA-1716	Filter
C2	80	300	111086	PRS450/40-40		UPT8030		TVA-1716	Filter
C3A	80	300	111087	AFH1616G		UPT8830		TVL-2585	▲ Filter
B	80	300							■ Filter
C4A	.5Ω@15.75KC		111091	PRS6/1500		UPT202		TVC-2010	▲ Horiz. Cent. Cont. Bypass
B	2.5Ω@60∿			PRS6/1000					▲ Vert. Cent. Cont. Bypass
C5A	40	450	111072	AFH8422J		UPT421145		TVL-4840	▲ Decoupling
B	20	450							■ Decoupling
C	10	450							▲ 1st. Sync. Sep. Cath.
D	10	450							1st. Sync. Sep. Screen
C6A	40	450	111068	AF842J20B		UPT42145-V10		TVL-4747	▲ Video Output Screen
B	20	450							■ Audio Output Dec.
C	10	450							▲ Video Amp. Screen
D	100	50							Vert. Output Cathode
C7	5	50	111093	PRS150/4		BR550		TVA-1302	Horiz. Output Cathode
C8	25	25	111069	PRS25/25		BR252A		TVA-1205	Audio Output Cathode
C9	5	50	111047	PRS150/4		BR550		TVA-1302	Stabilizing Cap.
C10	220		110462	SI220	D6-221		GP2K-221	19C13	RF Coupling
C11	750		110654	SI750	D6-751		GP2L-751		AGC Filter
C12	750		110654	SI750	D6-751		GP2L-751		RF Amp. Screen
C13	750		110654	SI750	D6-751		GP2L-751		RF Bypass
C14	1500			SI1500	D6-152		GP2L-152	29C8	RF Amp. Plate Dec. †
C15	4.5		110667						RF Coupling
C16	4.5		110667						RF Coupling
C17	5.5		110655						RF Coupling
C18	1500			SI1500	D6-152		GP2L-152	29C8	Conv. Grid Filter †
C19	5000		110586	BPD-005	D6-502		811-005	29C1	Conv. Fil.
C20	1.5		110438	SI1.5NP0	TCZ-1.5		NP0K-1R5		Osc. Coupling
C21	10		110656	SI10N750	TCN-10				Fixed Trimmer
C22	22		110653	SI22	D6-220		GP1K-220	19C23	Osc. Grid Cap.
C23	750		110654	SI750	D6-751		GP2L-751		Osc. Decoupling
C24	220		110462	SI220	D6-221		GP2K-221	19C13	RF Coupling
C25	75		110483	SI75	D6-750		GP1K-750		RF Amp. Screen
C26	5000		110586	BPD-005	D6-502		811-005	29C1	RF Amp. Fil.
C27	1500			SI1500	D6-152		GP2L-152	29C8	RF Amp. Plate Dec. †
C28	75		110483	SI75	D6-750		GP1K-750		RF Bypass
C29	1500			SI1500	D6-152		GP2L-152	29C8	Conv. Grid Filter †
C30	5000		110586	BPD-005	D6-502		811-005	29C1	Conv. Fil.
C31	10		110656	SI10	D6-100		GP1K-100	19C19	Fixed Trimmer
C32	22		110653		TCN-22				Osc. Grid Cap.
C33	750		110654	SI750	D6-751		GP2L-751		Osc. Plate Decoupling
C34	10		110656	SI10N750	TCN-10		N750K-100		Fixed Trimmer
C35	5000		110586	BPD-005	DD-502	1D5D5	811-005	29C1	RF Bypass
C36	5000		110586	BPD-005	DD-502	1D5D5	811-005	29C1	RF Bypass
C37	2.2		110439		TCZ-2.2				1st. Video IF Grid
C38A	4000		110685	BPD-2X004	DD-2-502	1D5D4	822-004	36C2	1st. Video IF Fil.
B	4000					1D5D4			AGC Filter
C39	5000		110586	BPD-005	DD-502	1D5D5	811-005	29C1	1st. Video IF Plate
C40	470		110464	SI470	D6-471	5W5T5	GP2K-471	19C15	1st. Video IF Screen
C41	2.2		110439		TCZ-2.2				2nd. Video IF Grid
C42A	4000		110685	BPD-2X004	DD-2-502	1D5D4	822-004	36C2	2nd. Video IF Fil.
B	4000					1D5D4			AGC Filter
C43	5000		110586	BPD-005	DD-502	1D5D5	811-005	29C1	2nd. Video IF Plate
C44	5000		110586	BPD-005	DD-502	1D5D5	811-005	29C1	2nd. Video IF Screen
C45	2.2		110439		TCZ-2.2				3rd. Video IF Grid
C46A	4000		110685	BPD-2X004	DD-2-502	1D5D4	822-004	36C2	3rd. Video IF Fil.
B	4000					1D5D4			AGC Filter
C47	5000		110586	BPD-005	DD-502	1D5D5	811-005	29C1	3rd. Video IF Plate

TV PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA STROM-CARL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C48	470		110464	SI470	D6-471	5W5T5	GP2K-471	19C15	3rd. Video IF Screen
C49	5000		110586	BPD-005	DD-502	1D5D5	811-005	29C1	RF Bypass
C50	10000		110672	BPD-01	DD-103	PTE6S1	821-01	36C1	AGC Filter
C51	2	50	110675						AGC Filter
C52	5000		110586	BPD-005	DD-502	1D5D5	811-005	29C1	4th. Video IF Plate
C53	5000		110568	BPD-005	DD-502	1D5D5	811-005	29C1	4th. Video IF Screen
C54A	4000		110685	BPD-2X004	DD-2-502	1D5D4	822-004	36C2	4th. Video IF Cathode
B	4000					1D5D4			4th. Video IF Fil.
C55	5000		110586	BPD-005	DD-502	1D5D5	811-005	29C1	RF Bypass
C56	5000		110586	BPD-005	DD-502	1D5D5	811-005	29C1	Video Det. Fil.
C57	10000		110672	BPD-01	DD-103	PTE6S1	821-01	36C1	Video Amp. Screen
C58	68			SI68	D6-680	5R5Q7	GP1K-680	19C10	Fixed Trimmer
C59	.1	400	110724	P488-1	DF-104	PTE4P1		4TM-P1	Video Coupling
C60	.047	400	110722	P488-047	DF-503	PTE4S5		4TM-S47	Integrator Net.
C61	.033	1000	110759	P1088-033		PTE16S3		MB-S3	Accelerating Anode Dec.
C62	5		110593	SI5NP0			NP0K-050		Sound IF Coupling
C63	10000		110672	BPD-01	DD-103	PTE6S1	821-01	36C1	1st. Sound IF Screen
C64	5000		110586	BPD-005	DD-502	1D5D5	811-005	29C1	1st. Sound IF Cathode
C65	47		110402	SI47	D6-470		GP1K-470	19C25	2nd. Sound IF Grid
C66	10000		110672	BPD-01	DD-103	PTE6S1	821-01	36C1	2nd. Sound IF Screen
C67	330		110454	SI330	D6-331	5W5T3	GP2K-331	19C14	Diode Load Cap.
C68	330		110454	SI330	D6-331	5W5T3	GP2K-331	19C14	RF Bypass
C69	.0033	400	110715	P688-0033	D6-332	PTE6D3	GP2-333-332	6TM-D3	De-emphasis
C70	10000		110672	BPD-01	DD-103	PTE6S1	821-01	36C1	Audio Coupling
C71	220		110462	SI220	D6-221	5W5T25	GP2K-221	19C13	Tone Comp.
C72	5000		110586	BPD-005	DD-502	1D5D5	811-005	29C1	Audio Coupling
C73	.01	400	110718	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Tone Comp.
C74	.01	600	110737	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Coupling
C75	.0047	600	110735	P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Audio Output Plate
C76	.1	600	110743	P688-1	DF-104	PTE6P1		6TM-P1	Sync. Coupling
C77	10000		110672	BPD-01	DD-103	PTE6S1	821-01	36C1	Sync. Coupling
C78	.0022	600	110733	P688-0022	D6-222	PTE6D2	GP2-333-222	6TM-D22	Integrator Net.
C79	.0047	600	110735	P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Integrator Net.
C80	.0047	600	110735	P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Integrator Net.
C81	.0047	600	110735	P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Vert. Osc. Grid Cap.
C82	.22	400	110726	P488-22		GT4P25		4TM-P22	Vert. Sweep Coupling
C83	.033	600	110740	P688-033					Vert. Discharge
C84	.22	400	110726	P488-22		GT4P25		4TM-P22	Vert. Osc. Decoupling
C85	.1	600	110743	P688-1	DF-104	PTE6P1		6TM-P1	Fixed Trimmer
C86	.1	400	110724	P488-1	DF-104	PTE4P1		4TM-P1	Vert. Sweep Coupling
C87	.1	400	110724	P488-1	DF-104	PTE4P1		4TM-P1	Vert. Sweep Coupling
C88	.001	600	110731	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Horiz. Sync. Coupling
C89	.001	600	110731	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Horiz. Sync. Coupling
C90	.015	400	110719	P488-015		PTE6S15		6TM-S15	Integrator Net.
C91	.0047	600	110735	P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Horiz. AFC Filter
C92	.047	400	110722	P488-047	DF-503	PTE4S5		4TM-S47	Horiz. AFC Filter
C93	3900	500	110272	1464-004		1DR5D4		MS-24	Fixed Trimmer
C94	.1	600	110743	P688-1	DF-104	PTE6P1		6TM-P1	Horiz. MV Plate Dec.
C95	270	500	110289	SI270	D6-271	5W5T3	GP2K-271	MS-33	Horiz. MV Feedback
C96	.1	200	110415	P288-1	DF-104	PTE4P1		4TM-P1	Horiz. MV Cathode
C97	330	500	110234	1469-0003	D6-331	5R5T3	GP2K-331	MS-33	Horiz. Discharge
C98	270	500	110289	SI270	D6-271	5W5T25	GP2K-271	1FM-325	Horiz. Sweep Coupling
C99	.22	400	110726	P488-22		GT4P25		4TM-P22	Horiz. Output Screen *
C100	.22	400	110726	P488-22		GT4P25		4TM-P22	Horiz. Feedback Net
C101	.1	600	110743	P688-1	DF-104	PTE6P1		6TM-P1	Horiz. Feedback Net †
C102	120	3000	110692						Fixed Trimmer
C103	120	3000	110692						Fixed Trimmer ‡
C104	.001	600	110743	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	AGC Filter
C105	.0047	600	110735	P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	AGC Filter
C106	.1	400	110743	P488-1	DF-104	PTE4P1		4TM-P1	Damper Filter
C107	.068	400	110723	P488-068				4TM-S68	Damper Filter
C108	.1	600	110724	P688-1	DF-104	PTE6P1		6TM-P1	Damper Filter * ††
C109	500	20000	110680	HV20B	TV1-502		410-501		HV Filter
C110	500	20000	110680	HV20B	TV1 -502		410-501		HV Filter
C111	.0005	10000	110658	P10088-0005		PTE100T5		TVM-351	HV Doubler
C112	5000		110586	BPD-005	DD-502	1D5D5	811-005	29C1	Decoupling
C113	.01	1000	110568	P1088-01		PTE16S1		MB-S1	Line Filter
C114	.01	1000	110568	P1088-01		PTE16S1		MB-S1	Line Filter
C115	470		110464	SI470	D6-471	5W5T5	GP2K-471	19C15	Ant. Isolation *
C116	470		110464	SI470	D6-471	5W5T5	GP2K-471	19C15	Ant. Isolation *

† Some models use 2000 MMFD (Mfgrs. Part # 110652) in this application.
‡ Used in chassis Date-Coded 5104 and later.
* Not used in all models.
†† Some models use .047 MFD (Mfgrs. Part # 11574) in this application.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Strom-Carl. PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	50KΩ	½		(Concentrikit)			Horizontal Hold Control - Front
B	2Meg	½	145110	B11-123 *	RTV-281		Vertical Hold Control - Rear
C	Shaft End			B11-139 *			Attach Per Instructions in "Concentrikit"
R2A	2250Ω	4	145114	E-202 *	RTV-257		Focus Control - Wire Wound - Front
B	500KΩ	½					Tone Control - Rear
R3A	2000Ω	2	145111		RTV-256		Contrast Control - Wire Wound - Front
B	100KΩ	½					Brightness Control - Rear
R4A	250KΩ	½	145121	Q13-130	AG-64-Z	B-51-S ø	Volume Control - See Note 1
B	Shaft		Not req.	RQ	RS-2 ø	Not req.	Attach to R4A Per Instructions
C	Switch		Not req.	76-1	SWB	Not req.	Attach to R4A Per Instructions
R5	30Ω	2	145065	W-30X15 ø	RTV-15	SVT-902	Vertical Centering Control - Wire Wound - Tapped @ 15Ω
R6A	5000Ω	½	145079	Q11-114	AG-19-S	AN-10	Vertical Linearity Control
B	Shaft		Not req.	RQ	FKS-1/4	AK-1	Attach to R6A Per Instructions
R7A	6 Meg	½	145100		AM-86-S	AN-87	Vertical Size Control
B	Shaft		Not req.		FKS-1/4	AK-1	Attach to R7A Per Instructions
R8	30Ω	2	145066	W-30 ø	43-30 ø	VK-112	Horizontal Centering Control - Wire Wound

* Additional parts to be used with "Concentrikit".
ø Fashion shaft to duplicate original.
Note 1. Model 24C uses control with part number 145112.

TV PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING RESISTANCE	WATTS	REPLACEMENT DATA STROM-CARL. PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE SPECIFIED
R9	[illegible]		149101	BTS-1000	AGC Network
R10	3200Ω 20%	½	149103	BTS-3200	High Band RF Amp. Grid
R11	33KΩ 20%	½	149110	BTS-33K	High-Band RF Amp. Screen
R12	1000Ω 20%	½	149101	BTS-1000	High Band RF Amp. Plate Decoupling
R13	150Ω	½	149096	BTS-150	High Band RF Amp. Decoupling
R14	560Ω	½	28155	BTS-560	Low Band RF Amp. Grid
R15	33KΩ 20%	½	149110	BTS-33K	Low Band RF Amp. Screen
R16	1000Ω	½	149101	BTS-1000	Low Band RF Amp. Plate Decoupling - See Note 3
R17	150Ω	½	149096	BTS-150	Low Band RF Amp. Decoupling
R18	1000Ω 20%	½	149101	BTS-1000	High Band Converter Grid
R19	100KΩ 20%	½			High Band Converter Grid
R20	2700Ω	½	28163	BTS-270	High Band Oscillator Grid
R21	4700Ω 20%	½	149105	BTS-4700	High Band Oscillator Plate
R22	2200Ω 20%	½	149103	BTS-2200	Image Rejection Trap Coil Shunt
R23	10KΩ 20%	½	149107		Low Band Converter Grid Coil Shunt
R24	1000Ω	½	149101	BTS-1000	Low Band Converter Grid - See Note 3
R25	10KΩ 20%	½	149107		Low Band Oscillator Grid
R26	4700Ω 20%	½	149105	BTS-4700	Low Band Oscillator Plate
R27	150Ω 20%	½	149096	BTS-150	Low Band Oscillator Plate Decoupling
R28	10KΩ 20%	½	149107		Converter Plate
R29	150Ω 20%	½	149096	BTS-150	Converter Plate Decoupling
R30	1000Ω	½	149101	BTS-1000	AGC Network - See Note 3
R31	10KΩ	½	28170	BTS-10K	1st Video IF Transformer Shunt
R32	68Ω 20%	½	28144		1st Video IF Amp. Cathode
R33	220Ω	½	149097	BTS-220	1st Video IF Amp. Screen
R34	1000Ω	½	149005	BTS-1000	1st Video IF Amp. Plate Decoupling - See Note 3
R35	1000Ω	½	149101	BTS-1000	AGC Network - See Note 3
R36	10KΩ 20%	½	149107	BTS-10K	2nd Video IF Transformer Shunt
R37	68Ω 20%	½	28144		2nd Video IF Amp. Cathode
R38	220Ω	½	149097	BTS-220	Decoupling
R39	100Ω	½	149095	BTS-100	Decoupling - See Note 3
R40	1000Ω	½	149101	BTS-1000	AGC Network - See Note 3
R41	15KΩ	½	28172	BTS-15K	3rd Video IF Transformer Shunt
R42	68Ω 20%	½	28144		3rd Video IF Amp. Cathode
R43	220Ω	½	149097	BTS-220	3rd Video IF Amp. Screen
R44	100Ω	½	149095	BTS-100	3rd Video IF Amp. Plate Decoupling - See Note 3
R45	3300Ω	½	28184	BTS-3300	4th Video IF Transformer Shunt - See Note 6
R46	180Ω	½	28149	BTS-180	4th Video IF Amp. Cathode
R47	39KΩ 20%	½	28176	BTS-39K	4th Video IF Amp. Screen
R48	100Ω	½	149095	BTS-100	4th Video IF Amp. Plate Decoupling - See Note 3
R49	8200Ω 5%	½	28169		5th Video IF Transformer Shunt
R50	2700Ω 20%	½	28163	BTS-2700	Video Det. Diode Load
R51	10KΩ 20%	1	30417	BTA-10K	Video Amp. Screen
R52	1200Ω	½	28159	BTS-1200	Video Amp. Plate
R53	2700Ω 20%	½	28163	BTS-2700	Video Amp. Plate
R54	220Ω	½	149097	BTS-220	Video Output Cathode
R55	1500Ω	2	149046	BTB-1500	Video Output Plate
R56	1500Ω	2	149046	BTB-1500	Video Output Plate
R57	33KΩ 20%	½	149110	BTS-33K	Keyed AGC Grid
R58	10KΩ	1	30417	BTA-10K	Keyed AGC Screen
R59	27KΩ	2	149058	BTB-27K	Voltage Divider
R60	22KΩ 20%	½	27407	BTS-22K	Voltage Divider
R61	220KΩ	½	28183	BTS-220K	AGC Network - See Note 4
R62	47KΩ 20%	½	149111	BTS-47K	AGC Network
R63	100KΩ	½	149385	BTS-100K	AGC Network
R64	100KΩ 20%	½	28006	BTS-100K	Voltage Divider - See Note 5
R65	2.2Meg 20%	½	149121	BTS-2.2Meg	Isolation
R66	2.2Meg 20%	½	149121	BTS-2.2Meg	Picture Tube Grid
R67	100KΩ	½	28006	BTS-100K	Picture Tube Cathode
R68	1000Ω	½	149101	BTS-1000	Acc. Anode Load
R69	470KΩ 20%	½	149117	BTS-470K	Acc. Anode Decoupling
R70	180Ω	½	30149	BTS-180	1st Sound IF Amp. Cathode
R71	47KΩ 20%	½	149111	BTS-47K	2nd Sound IF Amp. Grid
R72	15KΩ 20%	½	28172	BTS-15K	2nd Sound IF Amp. Decoupling
R73	22KΩ 20%	½	27407	BTS-22K	Voltage Divider
R74	15KΩ	½	28172	BTS-15K	Ratio Det. Diode Load
R75	15KΩ	½	28172	BTS-15K	Ratio Det. Diode Load
R76	18KΩ	½	28173	BTS-18K	De-emphasis
R77	470KΩ 20%	½	149117	BTS-470K	Series Phono Input
R78	10Meg 20%	½	149125	BTS-10Meg	AF Amp. Grid
R79	470KΩ 20%	½	149117	BTS-470K	AF Amp. Plate
R80	470KΩ 20%	½	149117	BTS-470K	Output Grid
R81	330Ω	2	149020	BTB-330	Output Cathode
R82	3500Ω	20	149373	2D-3500	Decoupling
R83	10KΩ	½	149107	BTS-10K	Isolation
R84	1Meg 20%	½	28191	BTS-1Meg	1st Sync. Sep. Grid
R85	15KΩ	1	149188	BTA-15K	1st Sync. Sep. Screen
R86	47KΩ	1	31407	BTA-47K	1st Sync. Sep. Plate
R87	68KΩ 20%	½	149112	BTS-68K	Voltage Divider
R88	15KΩ	2	149056	BTB-15K	Voltage Divider
R89	10KΩ 20%	1	30417	BTA-10K	Voltage Divider
R90	4000Ω	5	149330	1 3/4A-4000	Decoupling - Wire Wound
R91	39KΩ 20%	½	28176	BTS-39K	Voltage Divider
R92	680KΩ 20%	½	149118	BTS-680K	Sync. Clipper Load
R93	100KΩ 20%	½	149113	BTS-100K	2nd Sync. Sep. Grid
R94	22KΩ 20%	½	27407	BTS-22K	2nd Sync. Sep. Plate
R95	2.2Meg 20%	½	149121	BTS-2.2Meg	Sync. Phase Inv. Grid
R96	1800Ω 20%	½	28161	BTS-1800	Sync. Phase Inv. Cathode
R97	1800Ω 20%	½	28161	BTS-1800	Sync. Phase Inv. Plate
R98	22KΩ	½	27407	BTS-22K	Integrator
R99	8200Ω	½	28169	BTS-8200	Integrator
R100	8200Ω	½	28169	BTS-8200	Integrator
R101	1.5Meg 20%	½	149120	BTS-1.5Meg	Vertical Oscillator Grid
R102	1.8Meg	½	28194	BTS-1.8Meg	Vertical Oscillator Plate
R103	2.2Meg 20%	½	149121	BTS-2.2Meg	Vertical Oscillator Decoupling
R104	10KΩ	½	28170	BTS-10K	Vertical Oscillator Transformer Shunt
R105	10KΩ 20%	½	28170	BTS-10K	Vertical Peaking
R106	2.2Meg	½	149121	BTS-2.2Meg	Vertical Output Grid
R107	820Ω 20%	½	28157	BTS-820	Vertical Output Cathode
R108	8200Ω	½	28169	BTS-8200	Vertical Retrace Blanking Network
R109	100KΩ 20%	½	149113	BTS-100K	Horizontal Phase Det. Diode Load
R110	100KΩ 20%	½	149113	BTS-100K	Horizontal Phase Det. Diode Load
R111	470KΩ 20%	½	149117	BTS-470K	Horizontal AFC Filter
R113	470KΩ 20%	1		BTA-470K	Voltage Divider
R113	4.7Meg 20%	½	149123	BTS-4.7Meg	Horizontal MV Grid
R114	1500Ω 20%	½	28160	BTB-1500	Horizontal MV Cathode

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	WATTS	REPLACEMENT DATA STROM-CARL PART No.	IRC PART No.	IDENTIFICATION CODES
R115	5600Ω	1	149184	BTA-5600	Horizontal MV Plate
R116	8200Ω	1	37200	BTA-8200	Horizontal MV Plate Decoupling
R117	150KΩ 20%	½	149386	BTS-150K	Horizontal MV Grid - See Note 4
R118	220KΩ 20%	½	28183	BTS-220K	Horizontal MV Plate Decoupling
R119	10KΩ	½	28170	BTS-10K	Horizontal Peaking - See Note 2
R120	100Ω 20%	½	149095		Parasitic Suppressor
R121	100Ω 20%	½	149095		Parasitic Suppressor
R122	100Ω 20%	½	149095		Parasitic Suppressor
R123	100Ω 20%	½	149095		Parasitic Suppressor
R124	47Ω	½			Parasitic Suppressor
R125	47Ω	½			Parasitic Suppressor
R126	1Meg	½	28191	BTS-1Meg	Horizontal Output Grid
R127	47Ω 5%	2	149031	BW-2-47	Horizontal Output Cathode
R128	12KΩ	5	149335	1 3/4A-12K	Horizontal Output Screen - Wire Wound
R129	100KΩ	2	149265	BTB-100K	Voltage Divider
R130	5600Ω	1	149184	BTA-5600	Horizontal Feedback
R131	5600Ω	2	149052	BTB-5600	Horizontal Size Coil Shunt
R132	12KΩ	20	149379	2D-12K	Damper Filter - Wire Wound - See Note 2
R133	3.9Ω	½	149376	BW-½-3.9	HV Rectifier Filament - Wire Wound
R134	3.9Ω	½	149376	BW-½-3.9	HV Rectifier Filament - Wire Wound
R135	680KΩ 20%	1	149368	BTA-680K	HV Rectifier Load
R136	680KΩ 20%	1	149368	BTA-680K	HV Rectifier Load
R137	680KΩ 20%	1	149368	BTA-680K	HV Rectifier Load
R138	680KΩ 20%	1	149368	BTA-680K	HV Rectifier Load
R139	220Ω	2	149038	BW-2-220	Focus Coil Shunt
R140	2200Ω 20%	1	149140	BTA-2200	Decoupling
R141	3000Ω	10	149365	1 3/4A-3000	Decoupling - Wire Wound
R142A	5000Ω	6	149114		Voltage Divider - Wire Wound
B	3500Ω	12			Voltage Divider - Wire Wound
R143	180KΩ	½	28182	BTS-180K	Voltage Divider
R144	180KΩ	½	28182	BTS-180K	Voltage Divider
R145	180KΩ	½	28182	BTS-180K	Voltage Divider
R146	180KΩ	½	28182	BTS-180K	Voltage Divider

Note 2. Not used in all models.
Note 3. Some models use 2.2 microhenries choke in this application.
Note 4. Some models use 100KΩ resistor in this application.
Note 5. Some models use 150KΩ resistor in this application.
Note 6. Some models use parallel resistors in this application to obtain desired value.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	SEC. 1	SEC. 2	SEC. 3	REPLACEMENT DATA STROM-CARL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC	780VCT	5VAC	6.3VAC	161427			
	② 2.7A	.390ADC	② 6A	② 8.3A				
			SEC. 4	SEC. 5				
			6.3VAC	6.3VAC				
			③ .2A	④ 1.6A				

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	SEC.	STROM-CARL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	162Ω	910Ω	161254	A-8111 ①	A-3000 ①	TB0-1 ①	Vertical Blocking Osc. Trans.
T3	150Ω	55Ω	161034			TFB-4	Horizontal Output Trans.
	Tap	Tap .4Ω					
	27.5Ω	SEC. 2					
		0Ω					
		SEC. 3					
		0Ω					
T4	570Ω	7Ω	161247	A-8115 ①	A-3038 ①	TS0-5 ①	Vert. Output Trans.
T5A	10.8Ω		114699	DY-7	MDF-70		Horiz. Deflection Coil
B	59Ω						Vertical Deflection Coil
T6	1.23KΩ		114102				Focus Coil

① Drill one new mounting hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	SEC.	DC RES. PRI.	SEC.	REPLACEMENT DATA Strom-Carl PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T7	5.6KΩ	3.2Ω	410Ω	.32Ω	161256	A-3877 ①	A-2930 ①	R0-9 ①	① Drill one new mounting hole.

TRANSFORMER (FILAMENT)

ITEM No.	RATING PRI.	SEC. 1	SEC. 2	SEC. 3	REPLACEMENT DATA STROM-CARL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T8	117VAC	6.3VAC			161425		P-2946	F-633
	③ .17A	④ 2.1A						

SPEAKER

ITEM No.	RATINGS FIELD RES.	V. C. IMP.	REPLACEMENT DATA Strom-Carl PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	PM	3.2Ω	155189	12J12	12A4A	
	CONE DIA.	V. C. DIA.				
SP2	11 3/4"	1"				

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 c/s)	REPLACEMENT DATA Strom-Carl PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.300A	60Ω	2.2 Henries	161038		C-2991 ①	TR-3300 ①	① Drill one new mounting hole

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	SEC.	REPLACEMENT DATA STROM-CARL PART No.	MEISSNER PART No.	IRC PART No.	NOTES
L2	High Band Antenna Coil	0Ω	0Ω	114676			
L3	High Band RF Trans. Pri.	0Ω		114066			
L4	High Band RF Trans Sec.	0Ω		114066			
L5	RF Choke	1.1Ω				CLA	2.2 Microhenries
L6	High Band Osc.	0Ω		114066			
L7	RF Choke	.1Ω		114060			
L8	Low-Band Ant. Coil	0Ω	0Ω	114057			
L9	Low Band RF Trans. Pri.	.3Ω		114065			
L10	RF Choke	1.1Ω				CLA	2.2 Microhenries
L11	Low Band RF Trap	0Ω		114642			
L12	Low Band RF Trans. Sec.	.2Ω		114065			
L13	Low Band Osc.	.2Ω		114065			
L14	Conv. Plate Coil	.1Ω		114061			
L15	1st Video IF	.1Ω	1Ω	114093			
L16	RF Choke	1.1Ω				CLA	2.2 Microhenries
L17	2nd Video IF	1Ω	1Ω	114396			
L18	RF Choke	1.1Ω				CLA	2.2 Microhenries
L19	RF Choke	1.1Ω				CLA	2.2 Microhenries
L20	3rd Video IF	1.1Ω	1.2Ω	114397			
L21	RF Choke	1.1Ω				CLA	2.2 Microhenries
L22	RF Choke	1.1Ω				CLA	2.2 Microhenries
L23	4th Video IF	.4Ω	.4Ω	114398			
L24	RF Choke	1.1Ω				CLA	2.2 Microhenries
L25	RF Choke	1.1Ω				CLA	2.2 Microhenries
L26	5th Video IF	.6Ω	.6Ω	114399			
L27	Peaking	24Ω		114716			Red and Yellow Dot
L28	Peaking	5.8Ω		114717			
L29	4.5MC Trap	1.8Ω		114383			
L30	Peaking	8.5Ω		114708			Wound on 5.5KΩ Resistor
L31	Peaking	9Ω		114709			Wound on 2.2 Meg Resistor (Green Dot)
L32	Peaking	9.5Ω		114710			Wound on 18KΩ Resistor
L33	Peaking	12Ω		114711			Wound on 15KΩ Resistor (Yellow Dot)
L34	1st Sound IF	3.5Ω		114400			
L35	2nd Sound IF	2Ω	2Ω	114401			
L36	Ratio Det. Trans.	5.5Ω	.8Ω	114375			Tap 1.1Ω
L37	Horiz. Osc.	120Ω		114069			
L38	Pulse Trans.	24Ω	70Ω	114108			
L39	Horiz. Size	2.5Ω		114100			
L40	RF Choke	7Ω		114113			
L41	Horiz. Lin.	3Ω	Tap 1.3Ω	114109			
L56	RF Choke			114071			Not used in all models.
L57	Line Choke			114696			Not used in all models.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA STROM-CARL PART No. FUSE	HOLDER	LITTELFUSE PART No. FUSE	HOLDER	REMARKS
M1	3AG	.250		27958	312.250	342001	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA STROM-CARL PART No.		NOTES
M2	Bayonet	6-8	.25	Blue	29956		Type # 44

MISCELLANEOUS

ITEM No.	PART NAME	STROM-CARL PART No.	NOTES
M3	RF Tuner	164016	
M4	Crystal	162094	Type 1N65
M5	Switch		Function (Phono-FM-AM-Low-High Band TV)
M6	Ion Trap		
	Trimmer	27081	20-75MMF (High-Band Antenna)
	Trimmer	27081	20-75MMF (Low-Band Antenna)
B1	Trimmer	110043	70-470MMF (Horizontal Speed)
B3	Trimmer	110040	30-270MMF (Horizontal Drive)
	Knob	134138	Tuning (AM-FM)
	Knob	134139	Tuning (TV)
	Knob	134140	Vernier
	Knob	134141	Vertical Hold
	Knob	134142	Brightness
	Knob	134143	Volume
	Knob	134145	Horizontal Hold
	Knob	134146	Contrast
	Knob	134147	Range (Function Switch)
	[illegible]	134162	Tone
	Knob	134163	Focus

RADIO PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		STROM-CARL PART No.	STANDARD REPLACEMENT		
V31	FM RF Amplifier	162012	6BA6	7BK	
V32	AM RF Amplifier	162012	6BA6	7BK	
V33	FM Converter	162017	12AT7	7BT	
V34	AM Converter	162013	6BE6	7CH	
V35	1st. FM-AM IF Amp	162012	6BA6	7BK	
V36	2nd. FM IF Amp.-AM Detector-AVC	162012	6BA6	7BK	
V37	Ratio Detector	162022	6AL5	6BT	
V38	Audio Amplifier	162030	6C4	6BG	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C117	5	50	111047	PRS150/4		BR550		TVA-1302	Stabilizing Cap.
C118	5	50	111047	PRS150/4		BR550		TVA-1302	AF Amp. Cathode
C119	20			SI20		5W5Q2	GP1K-200	MS-42	Fixed Trimmer
C120	100		110460	SI100	D6-101	5W5T1	GP1K-101	19C11	FM RF Coupling
C121A	5000		110685	BPD-005	DD-2-502	1D5D5	811-005	29C1	FM RF Amp. Cathode
B	5000			BPD-005		1D5D5	811-005	29C1	FM RF Amp. Screen
C122	5000		110586	BPD-005	DD-502	1D5D5	811-005	29C1	FM RF Amp. Plate
C123	100		110451	SI100	D6-101	5W5T1	GP1K-101	19C11	RF Coupling
C124	15			SI15	D6-150		GP1K-150	19C22	Fixed Trimmer
C125	1.5		110438	SI1.5NP0	TCZ-1.5		NP0K-1R5		Osc. Coupling
C126	47		110458	SI47	D6-470	5R5Q5	GP1K-470	19C25	Osc. Grid Cap
C127	27		110689		TCZ-27				Osc. Feedback †
C128	27		110690		TCN-27				Osc. Cathode
C129A	5000		110685	BPD-005	DD-2-502	1D5D5	811-005	29C1	Mixer Cathode
B	5000			BPD-005		1D5D5	811-005	29C1	Osc. Plate Decoupling
C130	5			SI5N750			N750K-050		Fixed Trimmer *
C131	.01	400	110687	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Mixer Plate Decoupling ‡
C132	100		110460	SI100	D6-101	5W5T1	GP1K-101	19C11	RF Coupling
C133	.01	400	110687	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	RF Amp. Plate Decoupling ♦
C134	.0047	400	110538	P488-0047	D6-472	1D5D5	GP2-333-472	6TM-D47	AVC Filter *
C135	.01	400	110687	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Decoupling
C136	5			SI5N750			N750K-050		Osc. Grid Cap.
C137	47		110458	SI47	D6-470	5R5Q5	GP1K-470	19C25	Osc. Coupling
C138	5000		110586	BPD-005	DD-502	1D5D5	811-005	29C1	Conv. Fil. *
C139	.01	400	110687	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	AVC Filter *
C140	10000		110672	SI10000	D6-103	1D3S1	GP2-333-103	36C1	AVC Filter
C141	.0047	400	110538	P688-0047	D6-472	1D5D5	GP2-333-472	6TM-D47	1st. IF Amp. Plate
C142	.0047	400	110538	P688-0047	D6-472	1D5D5	GP2-333-472	6TM-D47	1st. IF Amp. Screen
C143	5000		110586	BPD-005	DD-502	1D5D5	811-005	29C1	1st. IF Amp. Cathode *
C144	.01	400	110687	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	RF Bypass *
C145	.01	400	110687	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	2nd. IF Amp. Plate ††
C146	5000		110586	BPD-005	DD-502	1D5D5	811-005	29C1	2nd. IF Amp. Screen ††
C147	5000		110586	BPD-005	DD-502	1D5D5	811-005	29C1	2nd. IF Amp. Cathode *
C148	220		110462	SI220	D6-221	5W5T25	GP2K-221	19C13	Diode RF Filter **
C149	.01	400	110687	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C150	5000		110586	BPD-005	DD-502	1D5D5	811-005	29C1	Diode Load Cap. ††
C151	330		110463	SI330	D6-331	PTE6D3	GP2K-331	19C14	RF Bypass
C152	.003	400	46315	P688-003	D6-302	PTE6D3	GP2-333-302	6TM-D3	De-emphasis
C153	.01	400	110687	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C154	.01	400	110687	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling

† Some models use 24MFD in this application.
* Not used in all models.
‡ Some models use 5000MMFD(Mfgrs. Part # 110586)in this application.
♦ Some models use 220MMFD.(Mfgrs. Part # 110462)in this application.
†† Some models use Dual 4000MMFD(Mfgrs. Part # 110685)in this application.
** Some models use Capacitor-Resistor unit consisting of Dual 100MMF and 47KΩ.
‡‡ Some models use .01MFD 400VDC(Mfgrs. Part # 110687)in this application.

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	STROM-CARL PART No.	IRC PART No.	
R147	2.2Meg	1/2		BTS-2.2Meg	AVC Network
R148	1Meg	1/2		BTS-1Meg	FM RF Amp. Grid - See Note 7
R149	68Ω	1/2			FM RF Amp. Cathode
R150	27KΩ	1		BTA-27K	FM RF Amp. Screen - See Note 8
R151	10KΩ	1		BTA-10K	FM RF Amp. Plate - See Note 7
R152	1000Ω	1/2		BTS-1000	FM RF Amp. Plate Decoupling - See Note 7
R153	39KΩ	1/2		BTS-39K	Voltage Divider - See Note 7
R154	2.2Meg	1/2		BTS-2.2Meg	AM RF Amp. Grid - See Note 9
R155	68Ω	1/2			AM RF Amp. Cathode
R156	5600Ω	1/2		BTS-5600	AM RF Amp. Plate Decoupling - See Note 7
R157	2200Ω	1/2		BTS-2200	AM RF Coil Shunt - See Note 7
R158	10KΩ	1/2		BTS-10K	AVC Network - See Note 7
R159	2200Ω	1/2		BTS-2200	FM Mixer Cathode
R160	47KΩ	1/2		BTS-47K	FM Mixer Decoupling
R161	10KΩ	1/2		BTS-10K	FM Oscillator Grid
R162	1000Ω	1/2		BTS-1000	Decoupling
R163	22KΩ	1/2		BTS-22K	AM Oscillator Grid
R164	12KΩ	2		BTB-12K	Screen Dropping
R165	47KΩ	1/2		BTS-47K	AVC Network - See Note 7
R166	68Ω	1/2			1st IF Amp. Cathode
R167	27KΩ	1		BTA-27K	1st IF Amp. Screen - See Note 8
R168	1000Ω	1/2		BTS-1000	1st IF Amp. Decoupling
R169	68Ω	1/2			2nd IF Amp. Cathode
R170	27KΩ	1		BTA-27K	2nd IF Amp. Screen - See Note 8
R171	1000Ω	1/2		BTS-1000	2nd IF Amp. Decoupling
R172	22KΩ	1/2		BTS-22K	Ratio Det. Diode Load - See Note 10
R173	6800Ω	1/2		BTS-6800	Ratio Det. Diode Load - See Note 7

RADIO PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (CONT.)

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	STROM CARL PART No.	IRC PART No.	
R174	250Ω	½		BTS-220	Balancing - See Note 11
R175	22KΩ	½		BTS-22K	De-emphasis
R176	2.2Meg	½		BTS-2.2Meg	AVC Network
R177	2.2Meg	½		BTS-2.2Meg	AVC Network
R178	270KΩ	½		BTS-270K	Diode Filter - See Note 12
R179	270KΩ	½		BTS-270K	Diode Load - See Note 13
R180	100KΩ	½		BTS-100K	AF Amp. Grid
R181	12KΩ	½		BTS-12K	AF Amp. Cathode
R182	56KΩ	½		BTS-56K	AF Amp. Plate

Note 7. Not used in all models.
Note 8. Some models use 22KΩ resistor in this application.
Note 9. Some models use 1 meg resistor in this application.
Note 10. Some models use 6800Ω resistor in this application.
Note 11. Some models use 180Ω resistor in this application.
Note 12. Some models use 47KΩ dual 100MMF capacitor-resistor unit in this application.
Note 13. Some models use 100KΩ resistor in this application.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	STROM-CARL PART No.	MEISSNER PART No.	IRC PART No.	
L42	FM Ant. Coil	0Ω		114097			
L43	FM RF Coil	0Ω		114098			
L44	Fil. Choke	1.1Ω		114693		CLA	2.2 Microhenries
L45	RF Choke	1.1Ω		114093		CLA	2.2 Microhenries
L46	FM Osc. Coil	0Ω		114098			
L47	Loop Ant.	1.9Ω		139047			
L48	AM RF Coil	1.2Ω	10Ω	114095			Tap 6.5Ω
L49	AM Osc. Coil	7.5Ω		114096			
L50	1st FM IF	1.5Ω	1.5Ω	114403			
L51	1st AM IF	15Ω	18Ω	114364			
L52	2nd FM IF	1.2Ω	1.2Ω	114363			
L53	2nd AM IF	15Ω	18Ω	114364			
L54	Fil. Choke	.8Ω		114697		CL-1	1 Microhenry
L55	Ratio Det. Trans.	3Ω	.4Ω	114404			Tap .8Ω

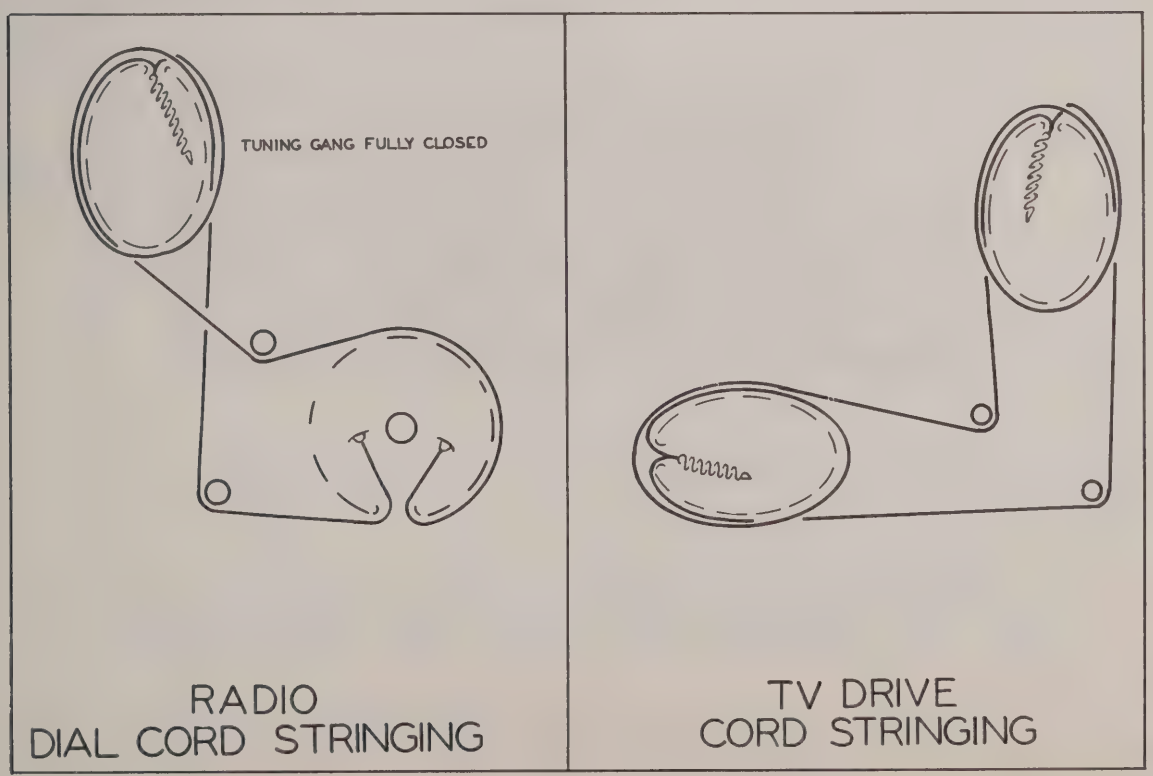
PHONO CARTRIDGE and NEEDLE

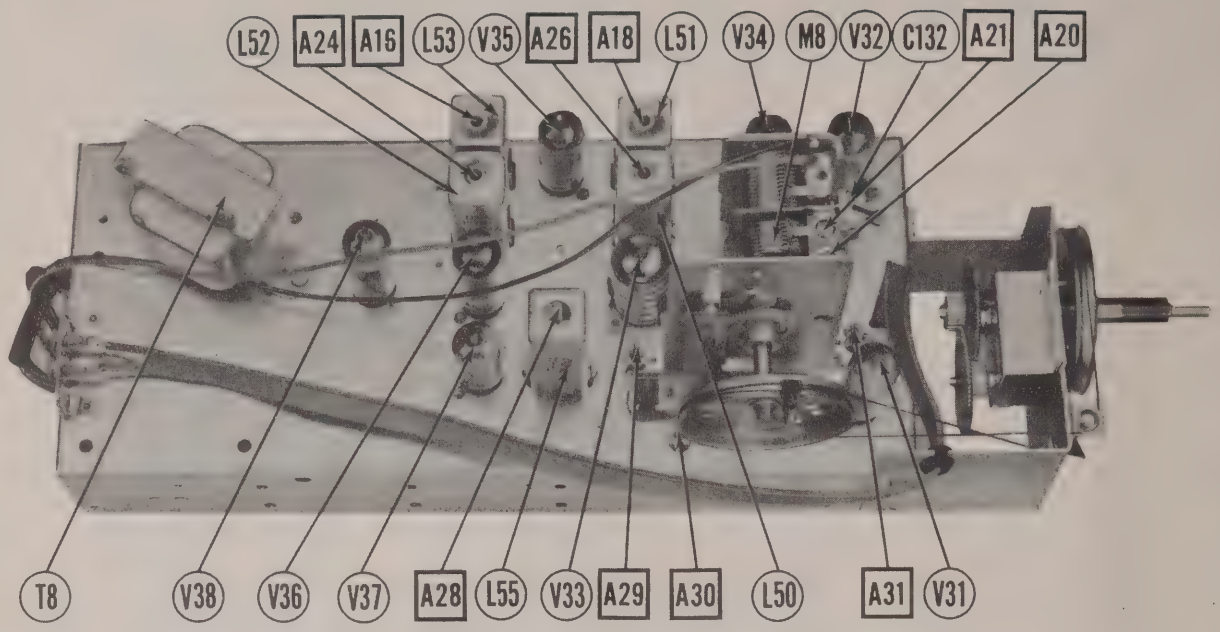
ITEM No.	REPLACEMENT DATA							REMARKS
	STROM-CARL PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M7		LQD-1J	Q-33J Q-J			96-0	0-1 or S-1 and 0-3 or S-3	

ASTATIC AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED.

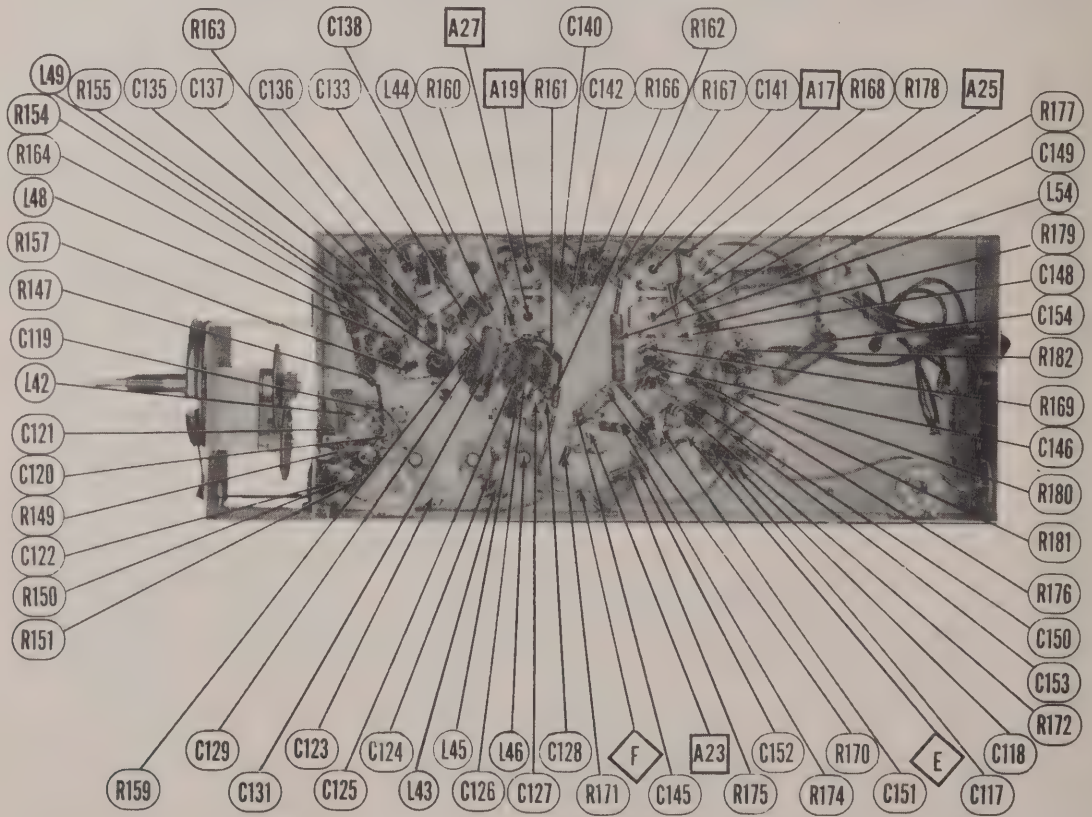
MISCELLANEOUS

ITEM No.	PART NAME	STROM-CARL PART No.	NOTES
M8	Tuning Cap	110044	(21-482MMF, 18-250MMF, 14-109MMF)





RADIO CHASSIS-TOP VIEW



RADIO CHASSIS-BOTTOM VIEW

V-M
MODEL 980

V-M
MODEL 980

TRADE NAME	V-M, Model 980
MANUFACTURER	V-M Corp., Benton Harbor, Michigan
TYPE SET	AC Operated Automatic Record Player with 3 Tube Amplifier
TUBES (THREE)	Types 12SQ7 AF Amp., 50L6GT Power Output, 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC RATING .25 Amp. @ 117 Volts AC

FOR SERVICE INFORMATION ON RECORD CHANGER SEE V-M MODEL 950
IN PHOTOFACT SET 107 FOLDER 13 OR RECORD CHANGER MANUAL CM-3.

HOWARD W. SAMS & CO., INC. • Indianapolis · Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		V-M PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	12SQ7	12SQ7	8Q	
V2	Power Output	50L6GT	50L6GT	7AC	
V3	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	V-M PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	60	150	3832	PRS150/50-30-20		EDL8415C		TVA-3455	Filter
B	20	150							Filter
C	20	50							Output Cathode
C2	.003	600	2850	P688-003	D6-302	PTE6D3	GP2-333-302	6TM-D3	Audio Coupling
C3A	250		3614 ♦	SI250	♦	5W5T25	GP2K-251	6TM-T25	RF Amp. Plate
B	.01			P488-01	PC-81	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C	250			SI250		5W5T25	GP2K-251	6TM-T25	Output Grid Cap.
C4	.003	600	2850	P688-003	D6-302	PTE6D3	GP2-333-302	6TM-D3	Tone Comp.
C5	.08	400	2894	P488-1	DF-104	PTE4P1		4TM-P1	Line Isolation

♦ Items C3A, C3B, C3C, R5A, R5B are combined in one unit.

CONTROLS

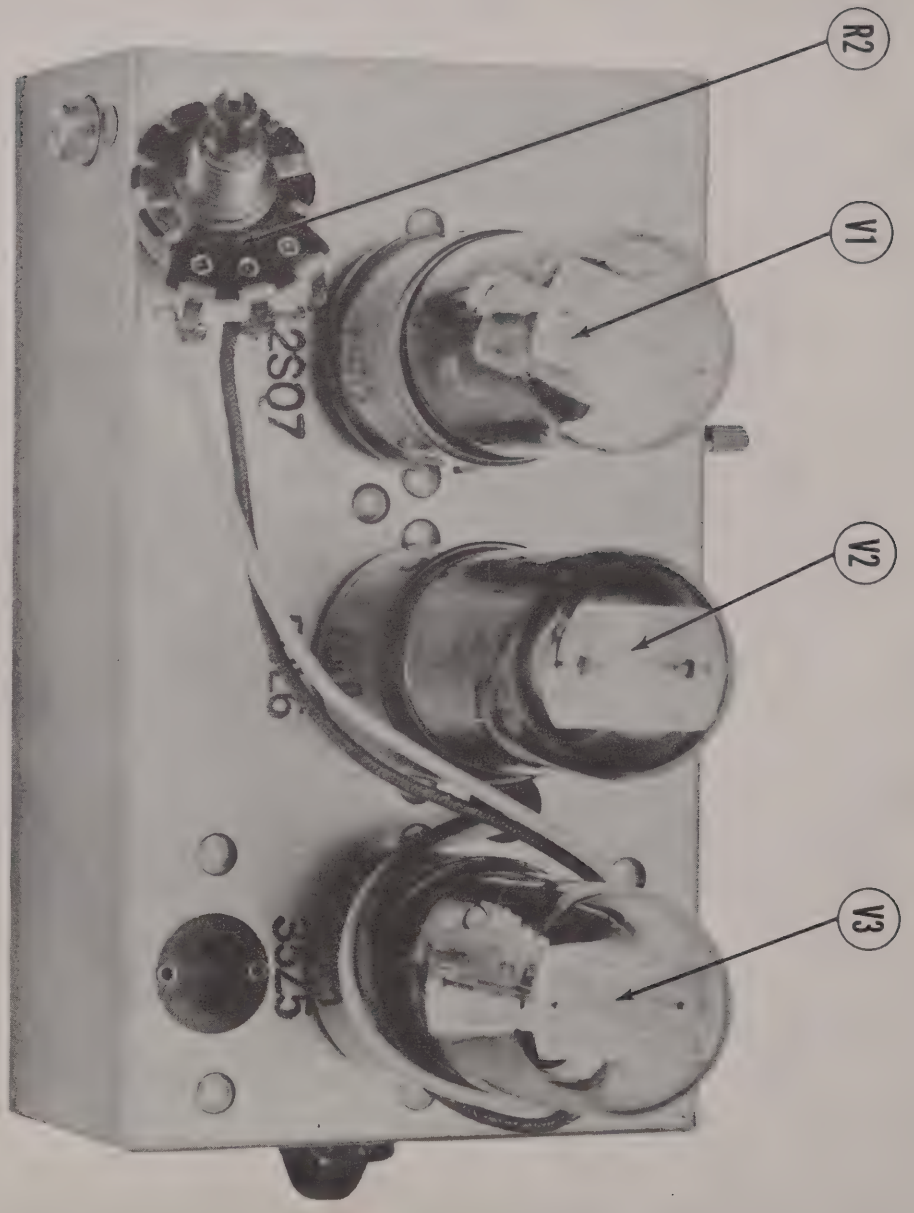
ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	V-M PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1A	2Meg	½	4128	Q13-139	AG-66-Z	AN-76	Volume Control
B	Shaft		Not req.	Not req.	KSS-3	AK-4	Attach to R1A per instructions
C	Switch		Not req.	76-1	SWB	K-155	Attach to R1A per instructions
R2A	500KΩ	½	4127	Q13-133	AG-60-Z	BSK-60	Tone Control
B	Shaft		Not req.	Not req.	KSS-3	Not req.	Attach to R2A per instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	V-M PART No.	IRC PART No.	
R3	470KΩ	½	3032	BTS-470K	Isolation
R4	4.7Meg	½	2853	BTS-4.7Meg	AF Amp. Grid
R5A	250KΩ	½	3614 ♦	BTS-270K	AF Amp. Plate
B	500KΩ	½		BTS-470K	Output Grid
R6	150Ω	½	2854	BTS-150	Output Cathode
R7	4700Ω	½	2855	BTS-4700	Filter
R8	33Ω	½	2893		Surge Limiter
R9	150Ω	10	2843	1 3/4A-150	Filament Droppling - Wire Wound

♦ Items R5A, R5B, C3A, C3B, and C3C are combined into one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		V-M PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2KΩ	3Ω	160Ω	.4Ω		A-3332 ①	A-3025 ①	R0-2 ①	① Bend mounting tabs down file out slots and mount on original bracket.

SPEAKER

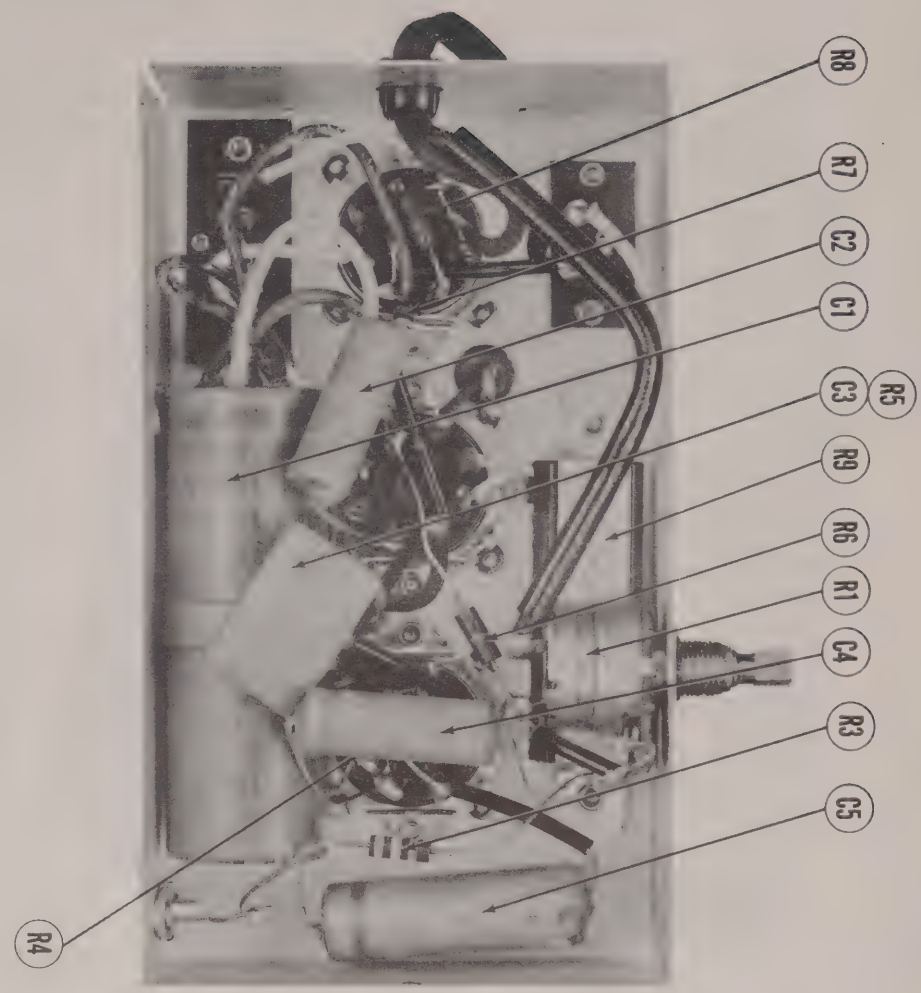
ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			V-M PART No.	VIKING PART No.	QUAM PART No.	
	FIELD	V. C. IMP.				
SP1	PM	3Ω	4224 ②	46A1	46J6	② Includes output trans.
	CONE DIA.	V. C. DIA.				
SP2	4"X6"	9/16"				

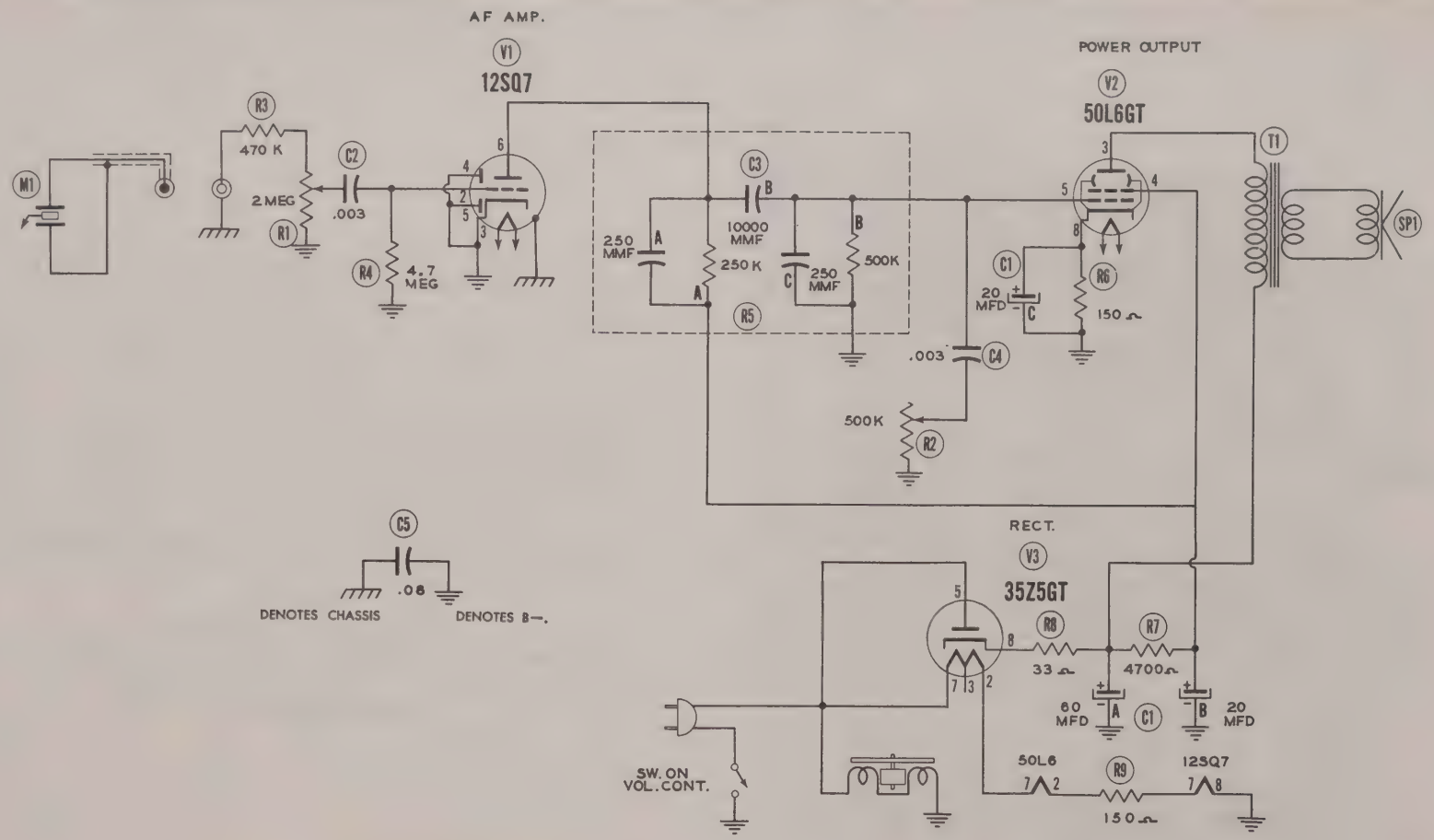
PHONO CARTRIDGE and NEEDLE

ITEM No.	REPLACEMENT DATA							REMARKS
	V-M PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1	2606	ACD-J	A-1 A-3	W22AB	A62A A65MG	96-T	0-1 or S-1 and 0-3 or S-3	

ASTATIC, SHURE, AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED.

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SQ7	0V	-.4VDC	0V	0V	0V	65VDC	12VAC	0V
V 2	50L6GT	0V	34VAC	115VDC	100VDC	.1VDC	0V	85VAC	-7.2VDC
V 3	35Z5GT	120VDC	85VAC	95VAC	120VDC	117VAC	117VAC	117VAC	120VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SQ7	0Ω	4.7Meg	0Ω	0Ω	0Ω	†255KΩ	12Ω	0Ω
V 2	50L6GT	500KΩ	162	†193Ω	†4.7KΩ	500KΩ	Inf.	212Ω	150Ω
V 3	35Z5GT	†33Ω	212Ω	230Ω	†33Ω	247Ω	247Ω	247Ω	170KΩ

† MEASURED FROM PIN 8 OF V3

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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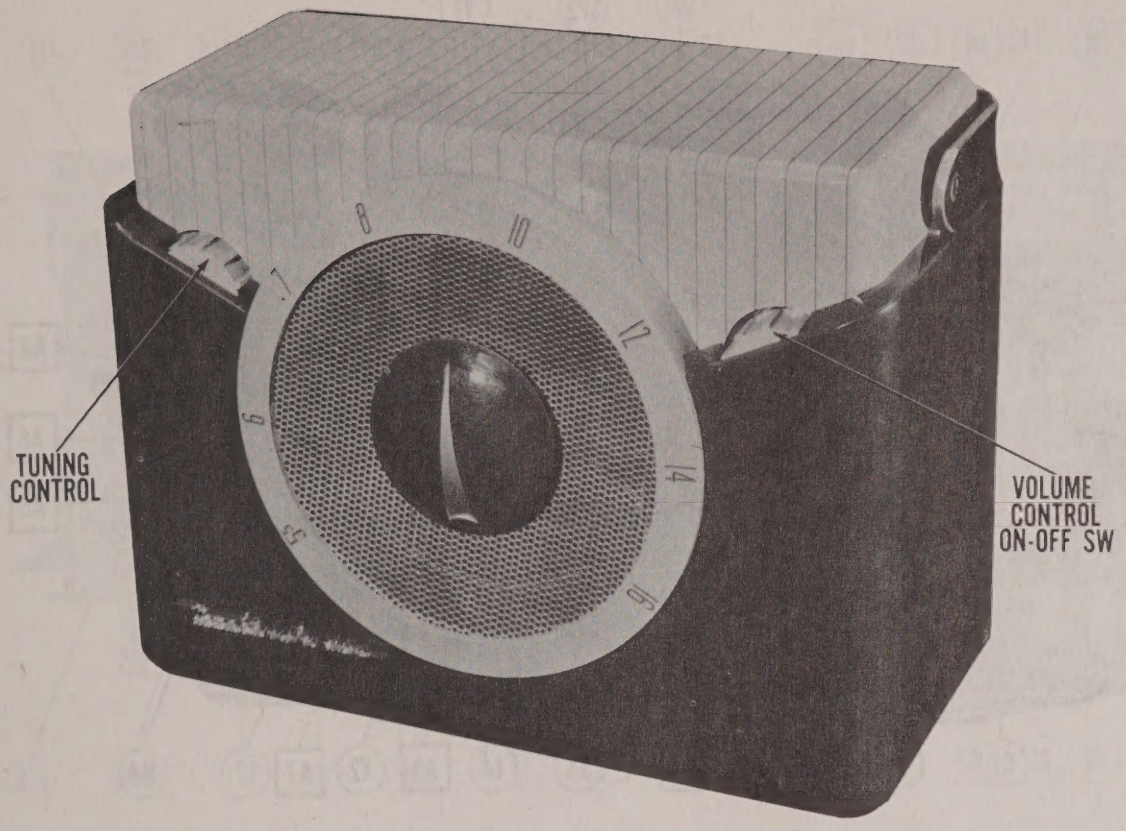
138-12

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

WESTINGHOUSE MODELS
H-342P5U, H343P5U (Ch. V-2156-1U)



WESTINGHOUSE MODELS
H-342P5U, H343P5U (Ch. V-2156-1U)

WESTINGHOUSE, MODEL H-343P5U

TRADE NAME	Westinghouse, Models H-342P5U, H-343P5U (Ch. V-2156-1U)
MANUFACTURER	Westinghouse Elect. Corp., Home Receiver Div., Sunbury, Pa.
TYPE SET	Three Power Operated Portable Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types 1U4 RF Amp., 1R5 Converter, 1U4 IF Amp., 1U5 DET.-AVC-AF Amp., 3V4 Power Output.
POWER SUPPLY	110-120 Volts AC/DC or 90 Volt "B" Supply and 9 Volts "A" Supply in Pack Form
RATING	.16 Amp. @ 117 Volts AC or 20MA @ 90 Volts DC and 50 MA @ 9 Volts DC
TUNING RANGE—BROADCAST	540-1615KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not connect a .1MFD capacitor in series with low side of signal generator and chassis. To set pointer, turn tuning cap fully closed and set pointer to last reference mark at low frequency end of dial. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	200MMF	High side to pin 6 (Grid) of 1R5 (V2). Low side to B-.	455KC	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	"	High side to stator on front section of tuning gang. Low side to B-.	1615KC	"	"	A5	"
3.	"	"	1400KC	Tune for max. output.	"	A6	"
4.	"	"	540KC	Tuning gang fully closed.	"	A7	"
5.		Loop	1400KC	Tune for max. output.	"	A8	Fashion loop of several turns of wire and radiate signal into loop of receiver Adjust for maximum output. Repeat steps 3, 4, and 5.

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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PARTS LIST AND DESCRIPTIONS

WESTINGHOUSE MODEL H-343P5U

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: WESTINGHOUSE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amplifier	1U4	1U4	6AR	
V2	Converter	1R5	1R5	7AT	
V3	IF Amplifier	1U4	1U4	6AR	
V4	Detector-AVC-AF Amplifier	1U5	1U5	6BW	
V5	Power Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: WESTINGHOUSE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	60	150	V-6552-2	ED4228		UP44415		R1105	● Filter
B	80	150				C10			■ Filter
C	40	150				BR6015			▲ Filter
D	100	25							Fil. Bypass
C2	.05	400	RCP10W2503M	P488-05	DF-503	PTE4S5		4TM-S5	AVC Filter
C3	.05	400	RCP10W2503M	P488-05	DF-503	PTE4S5		4TM-S5	Fil. Bypass
C4	100	500	RCM20A101M	1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	RF Coupling
C5	220	500	RCM20A221M	SI220	D6-221	5W5T25	GP2K-221	19C13	RF Coupling
C6	.05	400	RCP10W2503M	P488-05	DF-503	PTE4S5		4TM-S5	Conv. Screen
C7	.05	400	RCP10W2503M	P488-05	DF-503	PTE4S5		4TM-S5	AVC Filter
C8	.15	200	RCP10W2154M	P288-15				2TM-P15	Fil. Bypass
C9A	150			SI150	D6-151	5W5T15	GP2K-151		Diode RF Filter
B	.002			SI2000	76-202	1W5D2	GP2-333-202		Audio Coupling
C	.005		V-9703-1	SI5000	D6-502	1D5D5	GP2-333-502	34C4	AF Amp. Screen
D	100			SI100	D6-101	5W5T1	GP1K-101		AF Amp. Plate
E	.005			SI5000	D6-502	1D5D5	GP2-333-502		Audio Coupling
C10	.005	400		P688-005	D6-502	PTE6D2	GP2-333-502	6TM-D5	Output Plate *
C11	.047	400		P488-047	DF-503	PTE4S5		4TM-S47	Line Filter †
C12	.05	200	RCP10W2503M	P288-05	DF-503	PTE4S5		2TM-S5	Line Isolation

* Some models use .002 MFD 600V Mfgrs. Part # RCP10W5202M in this application.

† Some models use .05MFD 400V Mfgrs Part # RCP10W4503M in this application.

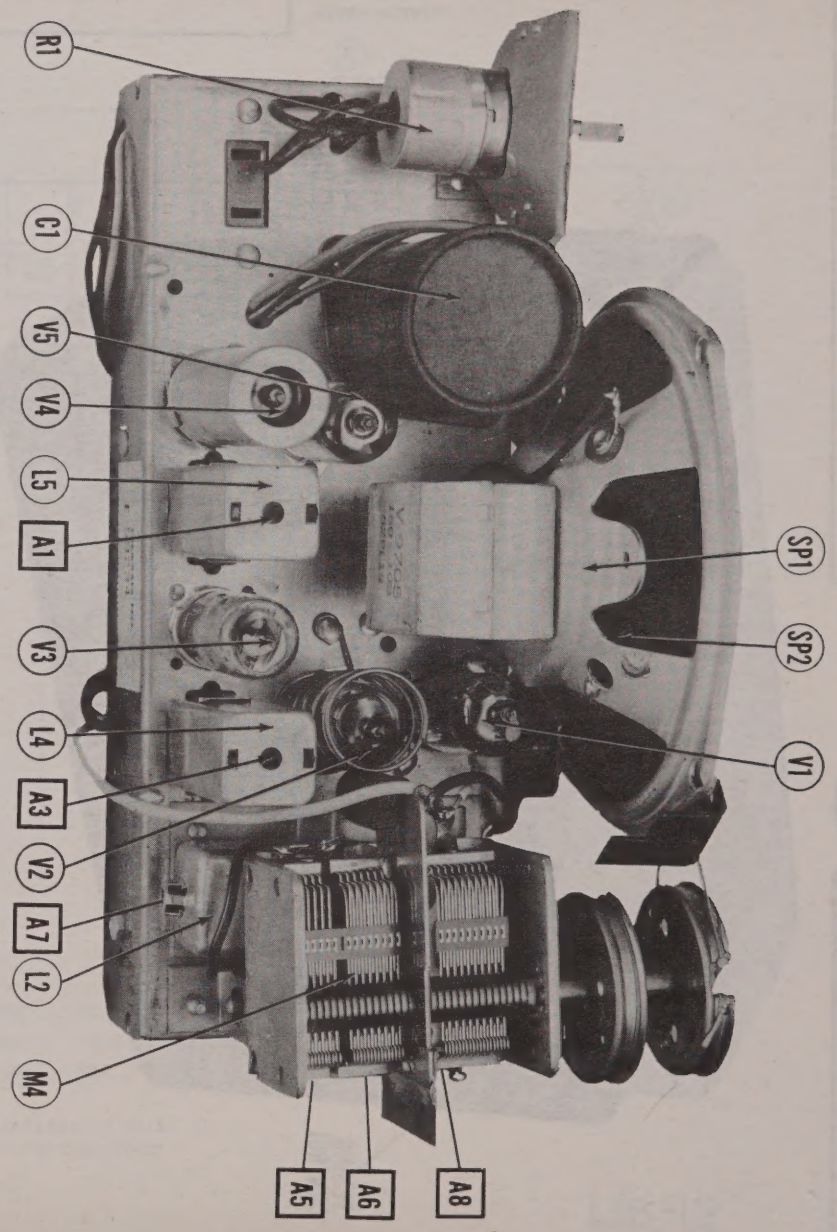
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Westinghouse PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½	V-10373-1	Q13-133	AG-60-Z	BSK-60-S	Volume Control
B	Shaft		Not req.	Not req.	KSS-3	Not req.	Attach to R1A per instructions
C	Switch		Not req.	76-2	SWB-2	Not req.	Attach to R1A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: WESTINGHOUSE PART No.	IRC PART No.	IDENTIFICATION CODES
R2	27KΩ	½	RC20AE273M	BTS-27K	RF Amp. Plate
R3	1Meg	½	RC20AE105M	BTS-1Meg	Conv. Grid
R4	100KΩ	½	RC20AE104M	BTS-100K	Osc. Grid
R5	10KΩ	½	RC20AE103M	BTS-10K	Osc. Anode
R6	6.8Meg	½	RC20AE685M	BTS-6.8Meg	AVC Network
R7	6.8Meg	½	RC20AE685M	BTS-6.8Meg	AVC Network
R8	2.2Meg	½	RC20AE225M	BTS-2.2Meg	IF Amp. Grid
R9	10Meg	½	RC20AE106M	BTS-10Meg	AF Amp. Grid
R10	1.5Meg	½	RC20AE155M	BTS-1.5Meg	AF Amp. Screen
R11	470KΩ	½	RC20AE474M	BTS-470K	AF Amp. Plate
R12	2.2Meg	½	RC20AE225M	BTS-2.2Meg	Output Grid
R13A	1285	10	V-5659-4		Filter - Wire Wound
B	1285				Filament Dropping - Wire Wound
R14	2200Ω	1	RC30AE222K	BTA-2200	Filter
R15	22Ω	1	RC30AE220M		Surge Limiter
R16	1000Ω	½	RC20AE102K	BTS-1000	Filament String
R17	2200Ω	½	RC20AE222K	BTS-2200	Filament String
R18	1000Ω	½	RC20AE102K	BTS-1000	Filament String

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		Westinghouse PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	8.2KΩ	3.3Ω	400Ω	.45Ω	V-6567-2	A-3329	A-2998		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			Westinghouse PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.		ST-105		
SP1	PM	3.3Ω	V-9705	Model P5-X	5A1	
	CONE DIA.	V. C. DIA.				
SP2	4½"	9/16				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	WESTINGHOUSE PART No.	MEISSNER PART No.	
L1	Loop Ant.	.2Ω		V-10391-1		
L2	RF Coil	14Ω		V-6561-2		Tapped @ 7Ω
L3	Osc. Coil	2.7Ω	12.5Ω	V-5661	14-1074	
L4	1st. IF	19Ω	19Ω	V-6972-5	16-6668	
L5	2nd. IF	25Ω	25Ω	V-6972-6	16-6669	

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	WESTINGHOUSE PART No.	SYLVANIA PART No.	SELETRON PART No.	
M1	.069A	V-9446-2	NB-5	5M4	

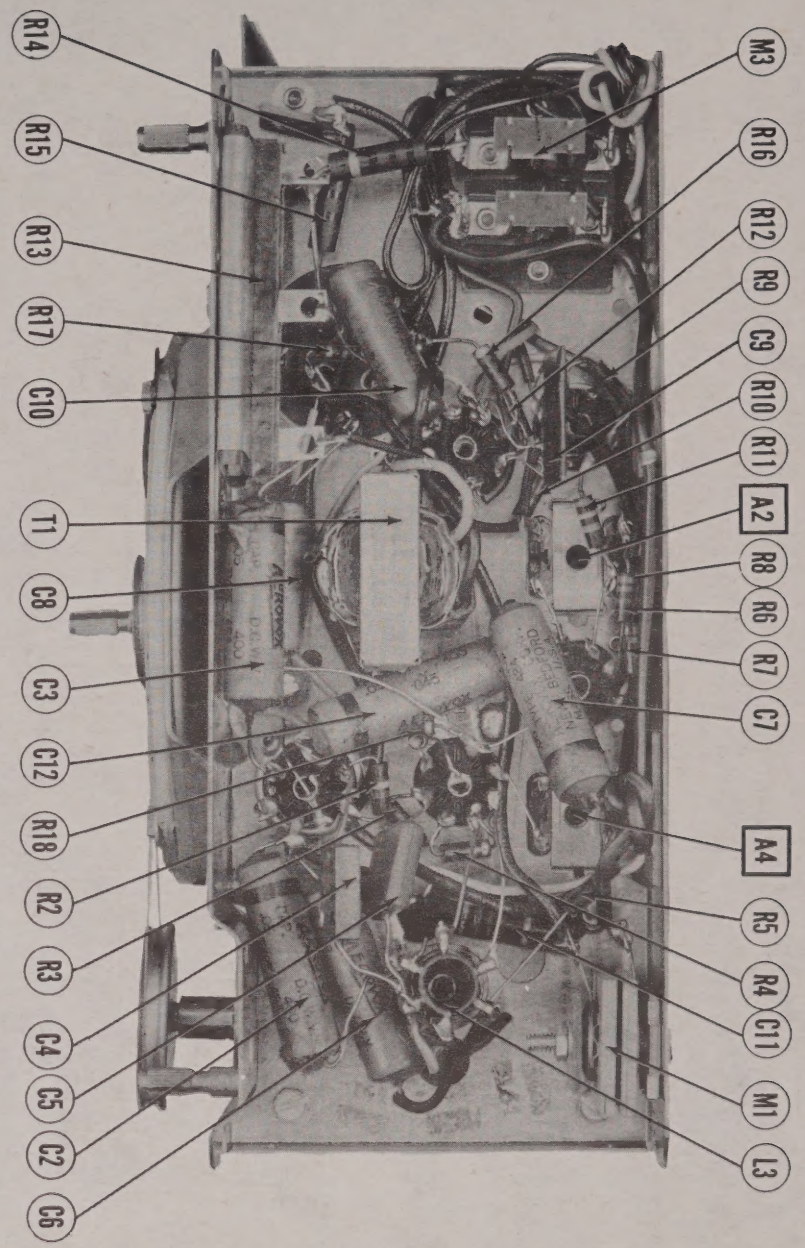
BATTERIES

ITEM No.	VOLTAGE	WESTINGHOUSE PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M2	9V "A" 90V "B"				756W			T6Z60	

MISCELLANEOUS

ITEM No.	PART NAME	WESTINGHOUSE PART No.	NOTES
M3	Switch	V-6565	Power Selector
M4	Tuning Cap	V-10372-1	(20-334MMF, 38-294MMF, 25-126MMF)
	Cabinet	V-1235-1	Model H-342P5U
	Cabinet	V-1235-2	Model H-343P5U
	Battery Plug	V-3873	
	Pointer	V-10389-1	Model H-342P5U
	Pointer	V-10389-2	Model H-343P5U
	Knob	V-10388-1	Model H-342P5U
	Knob	V-10388-2	Model H-343P5U

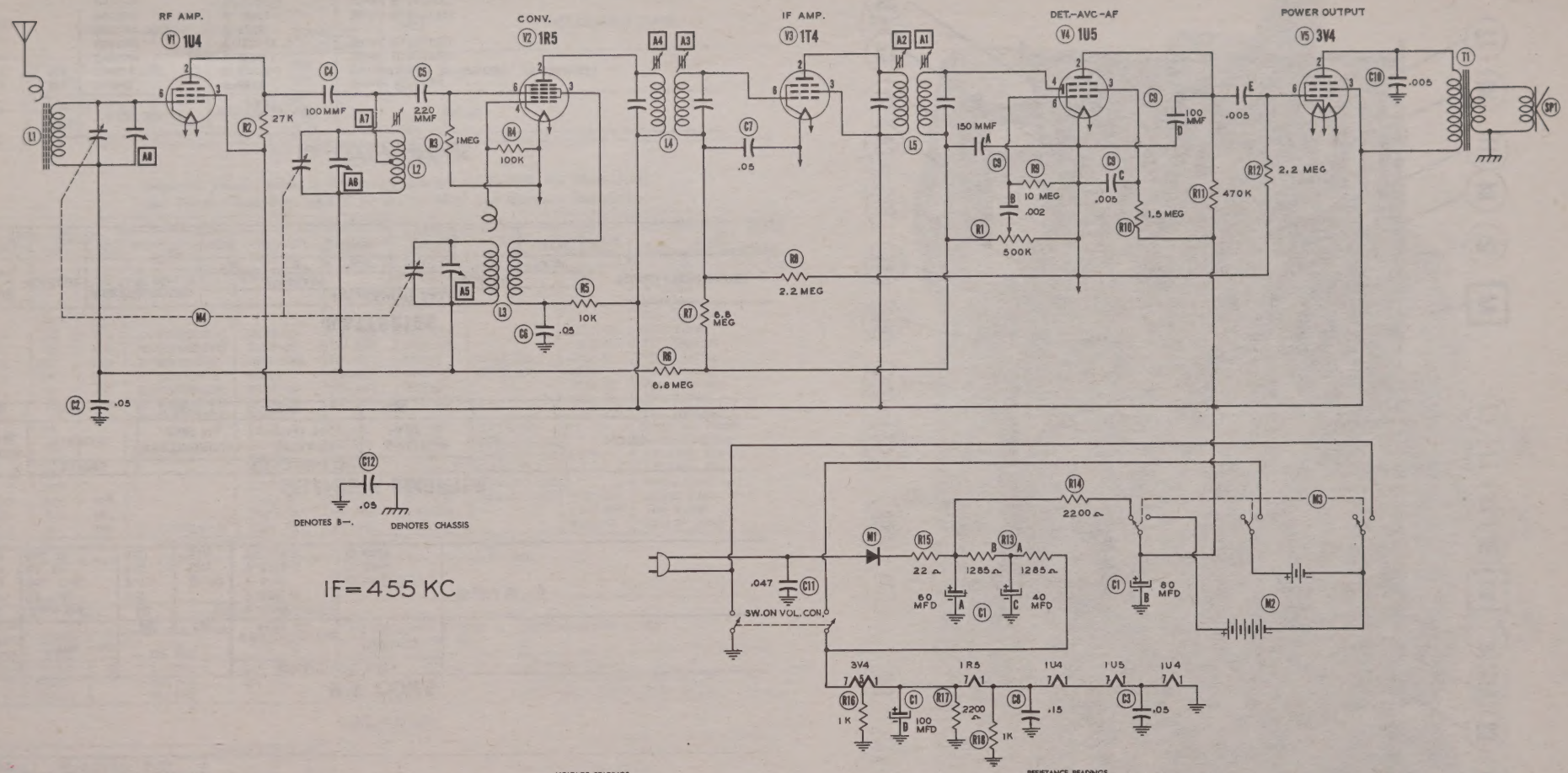
CHASSIS—BOTTOM VIEW



SET 138 FOLDER 13

WESTINGHOUSE MODEL H-343P5U

WESTINGHOUSE MODEL H-343P5U



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1U4	0V	75VDC	100VDC	0V	0V	0V	1.4VDC
V 2	1R5	4.2VDC	100VDC	60VDC	8-2VDC	4.2VDC	.2VDC	5.6VDC
V 3	1U4	2.8VDC	100VDC	100VDC	0V	2.8VDC	.1VDC	4.2VDC
V 4	1U5	1.4VDC	18VDC	25VDC	.2VDC	1.4VDC	0V	2.8VDC
V 5	3V4	5.8VDC	95VDC	100VDC	1.4VDC	6.8VDC	0V	8.4VDC

§ TAKEN WITH VTVM

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1U4	*	†30KΩ	2.2KΩ	Inf.	*	Inf.	*
V 2	1R5	*	†2.2KΩ	†13KΩ	100KΩ	*	1Meg	*
V 3	1U4	*	†2.2KΩ	†2.2KΩ	8Meg	*	2.2Meg	*
V 4	1U5	*	†470K	†1.5Meg	500KΩ	300KΩ	10Meg	*
V 5	3V4	*	†2.5KΩ	†2.2KΩ	*	*	2.2Meg	*

* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE
† MEASURED FROM OUTPUT OF M1

ALL MEASUREMENTS TAKEN IN AC-DC POSITION.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.